





Class

SB 354

Book

B4















OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

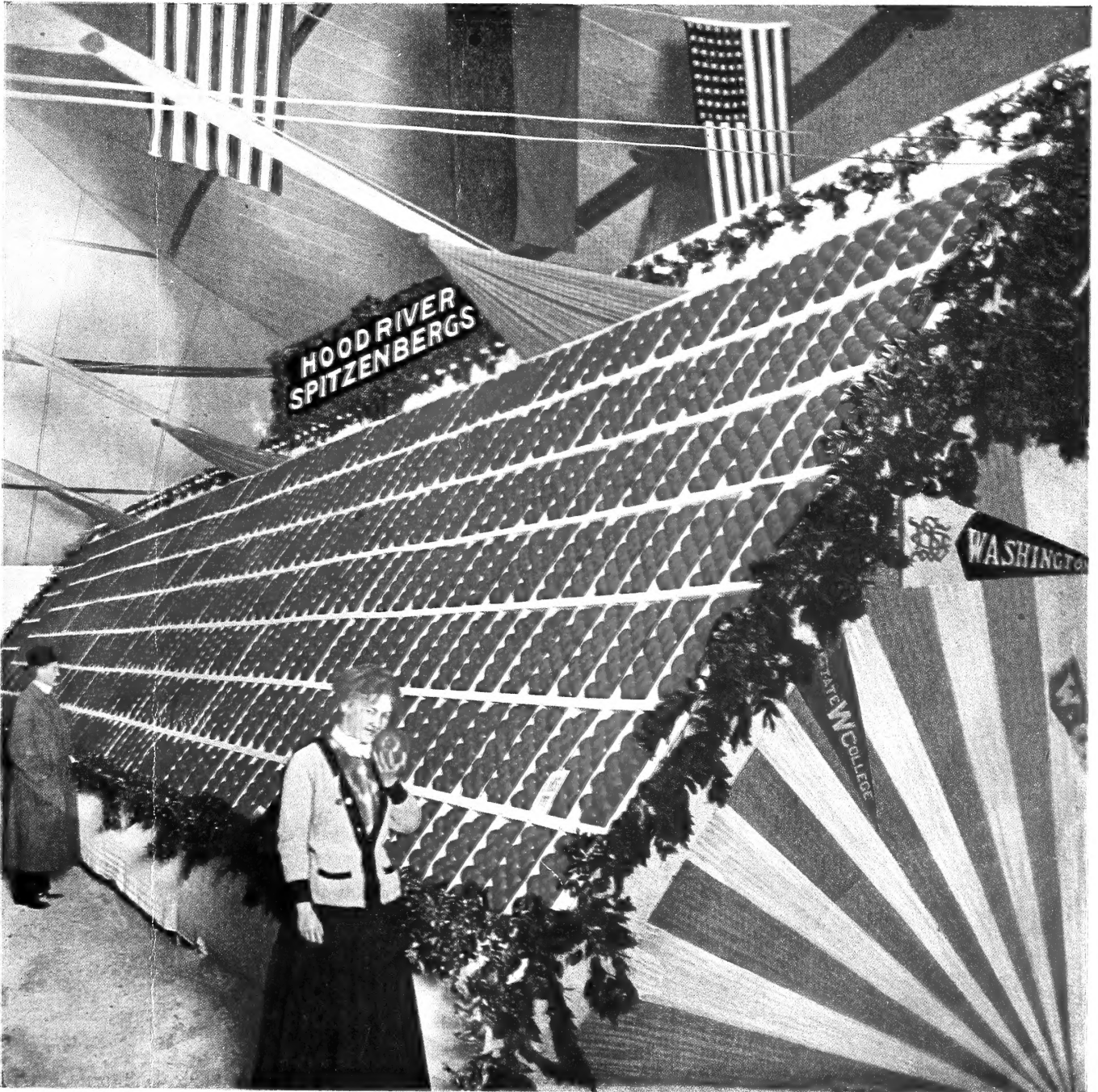
VOLUME FIVE

NUMBER SEVEN

10 CENTS  
A COPY DOLLAR A YEAR

# BETTER FRUIT

*JANUARY 1911—APPLE SHOW EDITION*



CHAMPIONSHIP CAR AT NATIONAL APPLE SHOW, SPOKANE, 1910

Winning \$1000 cash prize for best carload exhibited, \$250 cash prize for best car of Spitzenbergs, and solid silver cup given by the Chicago Association of Commerce for best packed car. Grown, packed and exhibited by C. H. Sproat, Hood River, Oregon, Manager Hood River Apple Growers' Union

PUBLISHED BY BETTER FRUIT PUBLISHING COMPANY, HOOD RIVER, OREGON

SB 307  
134

These artistic and beautiful pictures were photographed from the *real thing* and represent the

# Magnificent Spitzenbergs and the Superb Yellow Newtowns

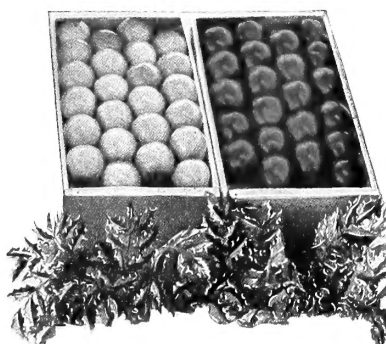
*As They are Grown and Packed at Hood River, Oregon*

AT THE NATIONAL APPLE SHOW, SPOKANE—Hood River won the Sweepstakes \$1000 cash prize for the best carload of apples, score 99.7, there being 22 carloads in competition. The \$250 cash prize for the best carload of Newtowns, score 98.8. The \$250 cash prize for the best car of Spitzenbergs, score 99.7. The solid silver \$500 trophy cup given at the National Apple Show, Chicago, for the best packed car, also the silver plate for the best carload of Newtowns given by Garcia Jacobs & Co., London, England. All these cars were grown by members of the Hood River Apple Growers' Union.



High class and high priced people demand high class and high priced apples and the *Hood River Apple Growers' Union* can supply the goods

*Pack  
Unequalled and  
Quality  
Guaranteed*



NEWTOWNS AND SPITZENBERGS

*For Further Information  
Write the  
Hood River Apple  
Growers' Union  
Hood River, Oregon*



## Own an Irrigated Fruit Orchard

*in the famous*

# Bitter Root Valley

And Provide an Annuity for Old Age

We will plant and take care of the land during the growing period, turning over to you a bearing orchard, which will thereafter yield a competence for life. Easy terms

Send for Literature

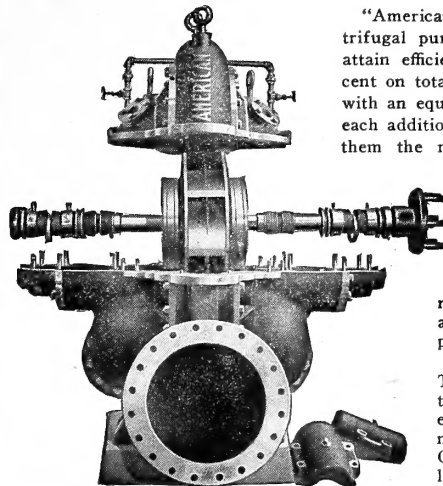
**Bitter Root Valley Irrigation Co.**

Hamilton, Montana

First National Bank Building, Chicago

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
last summer to pumps were awarded to

## “AMERICAN” PUMPING MACHINERY



“American” single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

“American” centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for “Efficiency Tests of American Centrifugals,” by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## The American Well Works

General Office and Works: Aurora, Illinois, U. S. A.

Chicago Office: First National Bank Building

PACIFIC COAST SALES AGENCIES:

70 FREMONT STREET, SAN FRANCISCO

341 SOUTH LOS ANGELES STREET, LOS ANGELES

SECOND AND ASH STREETS, PORTLAND, OREGON

1246 FIRST AVENUE SOUTH, SEATTLE

305 COLUMBIA BUILDING, SPOKANE

# Irrigation is King—

and the King of all Apples is grown in

# Spokane Valley

We received “THREE FIRST PRIZES” at the Third Spokane National Apple Show, held in Spokane November, 1910, which is conclusive evidence that we produce as high grade apples as are produced anywhere in the Northwest.

In addition to this, we have an ideal climate, best of transportation, and in view of the fact that our properties are located two and a half to twelve miles from the Queen City of the Inland Empire, “SPOKANE,” with a population of over one hundred thousand, affording unexcelled markets, with very best social and educational advantages, this should appeal to anyone looking for a comfortable as well as a profitable home.

Why not invest in land with all these advantages, obtainable for less money than can be bought in other districts.

*Write for Booklet, “Trip Through the Spokane Valley.”*

## Spokane Valley Irrigated Land Co.

Incorporated

NO. 401 SPRAGUE AVENUE

SPOKANE, WASHINGTON

# NORTHWESTERN FRUIT EXCHANGE

Executive Offices: 908, 910, 911, 912 Spalding Building  
Portland, Oregon

A Federation of Local Fruit Growers' Associations in  
the States of Oregon, Washington, Idaho and Montana

**PURPOSE:** To obtain for the fruit growers of the Pacific Northwest the utmost possible measure of money returns for their products.

**PRINCIPLES:** Securing for its membership the advantages of modern, scientific salesmanship, and a high order of business ability in the marketing of the fruits, through employment by the **united body** of the most competent and thoroughly trained talent available.

**Economy** in cost of marketing, through distribution of operating cost over a large volume of business, thus reducing to a minimum the cost per package to the individual.

**Knowledge** of the operation of the laws of supply and demand, which determine true value, and of the peculiarities of every market of the **world**, thereby avoiding many costly mistakes.

**Development of New Markets**, at home and in foreign countries, and the broadening of the demand for Northwestern fruits. The maintenance of the enviable reputation of our fruits for peerless quality in markets where they are already known, and their introduction and persistent upbuilding in markets where they are unknown.

**The Establishment of Uniform Grades** which will furnish a **standard** of value, thereby avoiding the present deplorable uncertainty and confusion on the part of the rank and file of the buying trade and enabling the fruit to be accurately and intelligently described to the **absent buyer**.

Through insistence on the part of its local associations of the observance of the grading rules, and the use of a standard and well filled package, to cultivate that **confidence** on the part of the buying trade which makes for stability of the market and the avoidance of the wild fluctuations which arrest consumption and unsettle confidence.

**The Protection of the Relatively Defenseless Individual** by the formidable strength of **union** in dealing with occasional unscrupulous or irresponsible buyers and in their relations with the **railroads** in matters of equitable rates, improved schedules, payment of just claims and other matters where the weight of a united and influential body assures results impossible where each man, or each district, works alone.

**In General**, the employment of the "machinery" of the **Exchange** wherever united strength can promote the general good of the industry.

**THE POLICY OF THE EXCHANGE:** Scrupulous handling of the growers' fruits and funds; the sales records of the **Exchange** are **wide open to any fruit grower at any time**.

The **encouragement and support of existing local associations**.

The assistance in the formation of new local associations where they are needed.

The **Exchange** invites the management of local associations and fruit growers generally to **examine its records of f.o.b. sales** during the season of 1910—and invites conferences looking to affiliation with the **Exchange**.

The **Exchange** also invites applications for aid in organizing new local associations, and will freely assist in this great, necessary, fundamental work.

The **Exchange** has published a booklet dealing briefly with its history and its purpose, and will gladly send it to anyone who may be interested.

## NORTHWESTERN FRUIT EXCHANGE



# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we **sell apples**. We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK

LIVERPOOL

NEW YORK

BOSTON

GLASGOW

# Gibson Fruit Company

Not Incorporated

*Wholesale Commission  
Shippers' Marketing Agents  
Fruit and Produce*

Our Own Cold Storage Plant on Premises

131 South Water Street

CHICAGO, ILLINOIS



*Best Service and Protection is Secured by Dealing  
with Members of the*

**NATIONAL LEAGUE OF  
COMMISSION MERCHANTS  
OF THE U. S. A.**

AN ORGANIZATION OF RELIABLE AND RESPONSIBLE RECEIVERS IN TWENTY-EIGHT MARKETS FOR FREE DIRECTORY OF MEMBERS, WRITE R. E. HANLEY, PUB. MGR., BUFFALO, NEW YORK

**SIMONS, SHUTTLEWORTH & CO.**

LIVERPOOL and MANCHESTER

SIMONS, JACOBS & CO.  
GLASGOWJ. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARISGARCIA, JACOBS & CO.  
LONDON**European Receivers of American Fruits***For Market Information Address:*Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webbing  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine**OUR SPECIALTIES ARE APPLES AND PEARS****LINDSAY  
& CO. LTD.**  
**Wholesale Fruits**

HELENA, MONTANA

*Established in Helena Quarter of a Century*Branch houses: Great Falls, Mis-  
soula and Billings, Montana**Ryan & Newton  
Company**

Wholesale Fruits &amp; Produce

Spokane, Washington

We have modern cold stor-  
age facilities essential for the  
handling of your products*Reliable Market Reports***PROMPT CASH RETURNS****Pearson-Page Co.**131-133 Front Street  
PORTLAND, OREGON*Superior facilities for handling***PEACHES  
APPLES AND  
PEARS****Solicit Your Consignments***Reliable Market Reports Prompt Cash Returns***Rae & Hatfield**

317 Washington Street, New York

**Largest Handlers of Pacific Coast Fruits in the East**REPRESENTING THE FOREMOST WESTERN SHIPPING COMPANIES AND ASSOCIATIONS  
ON THE NEW YORK MARKET*Operating in All Producing Sections***Reliable****Experienced****Prompt****APPLES WANTED**

Parties desirous of a first-class connection in the Chicago market for the handling of box apples and other fruit are invited to correspond with us. Our location is one of the best in Chicago. Our facilities for disposing of apples and other fruit are unsurpassed. Our responsibility is above question. Write or wire us what you have to offer.

**COYNE BROTHERS**

The House that "Gets there"

161 South Water Street, CHICAGO

IF YOU WANT TO  
MARKET YOUR  
**FRUIT**

RIGHT

ALWAYS SHIP TO

**W. B. Glafke Co.**

**WHOLESALE FRUITS  
AND PRODUCE**

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**  
**GENERAL COMMISSION MERCHANTS**

128 FRONT STREET

PHONES: MAIN 2348  
A 2348

PORTLAND, OREGON

**Levy & Spiegl**

WHOLESALE

**FRUITS & PRODUCE**

*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS

Top Prices and Prompt Returns

PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*

Livingstone, Billings, Sheridan,  
Montana; Lewiston, Idaho

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS

*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

**WHOLESALE  
FRUITS AND  
PRODUCE**

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of

**YAKIMA VALLEY FRUITS  
AND PRODUCE**

Specialties: Apples, Peaches,  
Pears and Cantaloupes

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER

**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

Look Good, Taste Better, Sell Best

*Grade and Pack Guaranteed*

**Apple Growers' Union**

Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

**WHOLESALE FRUITS**

121-123 FRONT AND  
200 WASHINGTON ST.

PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

# W. DENNIS & SONS

## LIMITED

COVENT GARDEN MARKET  
LONDON

and

CUMBERLAND STREET  
LIVERPOOL

DO NOT ARRANGE FOR THE  
MARKETING OF YOUR NEXT  
SEASON'S CROP, UNTIL YOU  
LEARN ALL ABOUT THE

## Produce Reporter Company AND ITS SYSTEM

It is not a selling agency, but it equips you to do your own business at the minimum expense and with the maximum safety.

No matter even if you should place your crop through some marketing agency, you ought to keep posted on that agency or that "distributor," and you should know to whom your goods go, and insist upon their being placed with or sold to reliable traders. **That is a duty that you owe yourself.**

It is impossible in the limited space of this advertisement to go into your great problem of successful marketing, but your investigation of this subject will not be complete unless you get the printed matter of this organization. It will cost you but a moment of your time and two cents postage to ask for it, and it may make or save you several hundred dollars next season.

## Produce Reporter Company

34 South Clark Street

Chicago, Illinois

## A SPLENDID OPPORTUNITY

To secure a giltedge Apple Orchard in the  
World's Greatest Apple District

## PAJORA VALLEY, CALIFORNIA

Owing to unavoidable circumstances the owner offers her orchard, located 7 miles from Watsonville, California, Corralitos district, at a great sacrifice. 51.65 acres; 3,785 trees, 6 to 9 years old; 826 Bellflowers, 1,140 Newtowns, 1,219 Spitzenbergs, balance assorted. This year's crop 10,500 packed boxes. Four-room house, packing house, blacksmith shop, barn and wagon house, 6,000-gallon cement tank, horses, harness, trucks, wagons, engine, spray outfits, tools, etc. Price \$16,000. A little over \$300 an acre. Orchards in same class are bringing not less than \$500 an acre.

For full particulars and photos of  
this and other good buys, write

## Farm & Forest Realty Company

WATSONVILLE, CALIFORNIA

# NEW ORLEANS

IMPORTERS  
JOBBER

Wholesale  
Commission

# LAUX & APPEL

All Fruits in Season

STORAGE FOR  
FIFTY CARS

The Acknowledged Fancy  
Fruit House of New Orleans

The  
House YOU Want

## MCEWEN & KOSKEY

Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

# OPPORTUNITY

## IN THE FAMOUS SPOKANE VALLEY

Every foot of land at OPPORTUNITY is capable of cultivation and will produce the highest grade of fruits which readily sell for the highest prices.

Not only is it a splennid orchard project, but a most attractive proposition for the home-seeker and home-builder. Here are electric lights, telephone service, railroad facilities, schools, churches, etc. Water for irrigation purposes and domestic use piped to each tract

## Our Guarantee to Investors

If you have not the time or inclination to plant and develop an orchard yourself, we will have our expert horticulturist plant an orchard for you to the best varieties of fruit, taking entire charge of it until it comes into bearing, and then turn over an orchard which is an income bringer right from the start.

If, at the expiration of four years you are not satisfied with your investment, WE WILL REFUND YOUR MONEY WITH SIX PER CENT INTEREST. This eliminates all financial risk on your part and makes your investment absolutely secure

This proposition is worth your further investigation. Our guarantee is absolutely good, as we are financially responsible, and can carry out all our plans for planting this land in orchards.

References: Old National Bank and Traders National Bank, Spokane, Washington.

### Modern Irrigation and Land Company

P. A. SUMMERLAND, General Sales Agent

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet on Opportunity.

Name .....

Address .....



# 320 Acre Planted Apple Orchard

## FROM ONE TO FOUR YEAR OLD, (STANDARD VARIETIES)

### At \$400 to \$500 Per Acre

Can be bought in five, ten or any size tract. Located in the Upper Hood River Valley. Have small or large tracts of improved and unimproved property in the lower and upper valley. Have also ten acres of bearing orchard for sale, located in center of Hood River Lower Valley.

*For Full Information Address*

G. D. WOODWORTH

HOOD RIVER, OREGON

# ARCADIA IRRIGATED ORCHARDS

THE CENTER OF THE RICH WASHINGTON FRUIT BELT

Arcadia is located twenty-two miles from Spokane, Washington. It's a true fruit district—with every conceivable advantage for making money in the fruit business.

Rich soil, gravity irrigation system, excellent railroad facilities, ideal climate.

**Our Plan**—We plant, cultivate, irrigate and care for your orchard for four years; we pay your taxes for five years. You can remain where you are while we bring your orchard into bearing.

Arcadia is the largest irrigation project in the West. Prices advance January 1st, 1911, so it will pay you to investigate Arcadia now. Ask for literature.

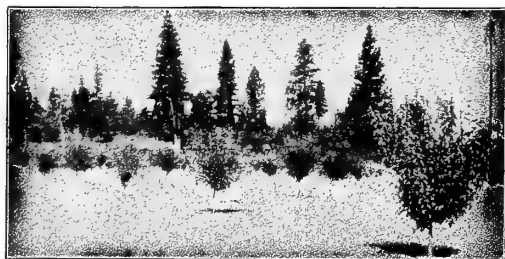
**ARCADIA ORCHARDS COMPANY**

HYDE BLOCK

SPOKANE, WASHINGTON

"THE LAND WHERE THE RAIN AND SUNSHINE MEET"

## LYLE, WASHINGTON



A YOUNG ORCHARD NEAR LYLE

THE FIRST PRIZE for the best district display of non-irrigated apples was awarded the LYLE exhibit at the SPOKANE NATIONAL APPLE SHOW, 1910. This speaks for itself.

*FOR BOOKLET AND FURTHER INFORMATION ADDRESS*

**LYLE COMMERCIAL CLUB**

LYLE, WASHINGTON

**\$1000**

**PER ACRE NET**

**\$1000**



MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley, and is properly a part of it, so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

SECRETARY MOSIER VALLEY COMMERCIAL CLUB

**MOSIER, OREGON**

JAMES J. HILL SAID OF

# The Willamette Valley, Oregon

"You have a valley here which is the most wonderful I have ever seen. \* \* \* In this valley a man can make \$5,000 a year from off ten acres."

We are selling Willamette Valley Fruit Lands, which are being developed under the supervision of Hon. W. K. Newell, president of the Oregon State Board of Horticulture. Call on or write us for particulars.

## THE A. C. BOHRNSTEDT COMPANY

629 Palace Building  
MINNEAPOLIS, MINNESOTA

CRESWELL, OREGON

302 U. S. National Bank Building  
SALEM, OREGON

# Spitzenbergs & Newtowns

*From the*

Hood River Valley,  
Oregon

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

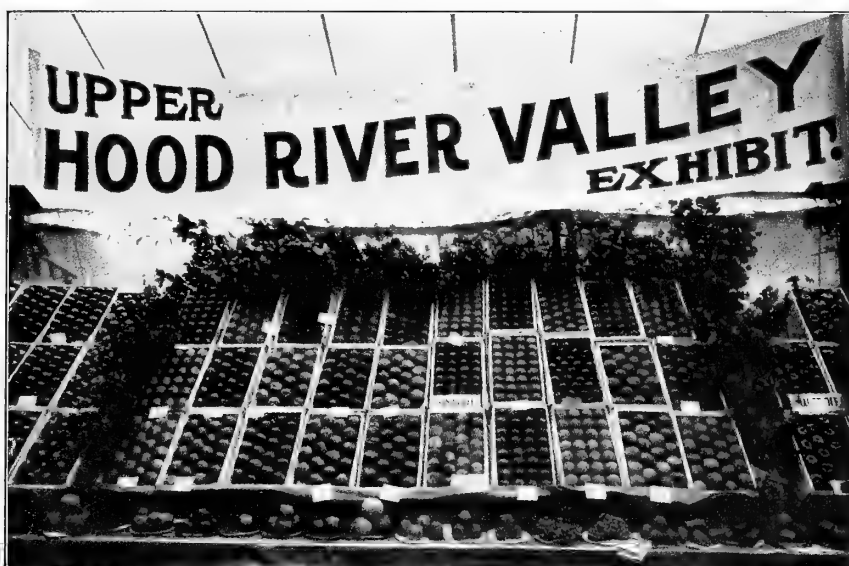
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

## Can You Beat It?

We have got land improved and unimproved that is growing such fruit, and can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

**W. L. Baker & Company** Hood River  
Oregon

The oldest real estate firm in Hood River. Best apple land our specialty

# HOW YOU CAN SECURE AN ORCHARD THAT WILL PAY FOR ITSELF

These orchards are located in the deep volcanic ash fruit soil of the great Columbia River Basin, less than 100 miles from Portland, Oregon, near Mount Hood and the famous Hood River Valley, with railroad depot on the property.

If you are interested, and have a little money, write, today, for full information in regard to this opportunity, the like of which you will not have again soon, and for "How I Can Secure an Orchard That Will Pay for Itself."

## DUFUR DEVELOPMENT COMPANY

91 Third Street

PORTLAND, OREGON

# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water TRANSPORTATION, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this world famous apple section of the Cascade Highlands.

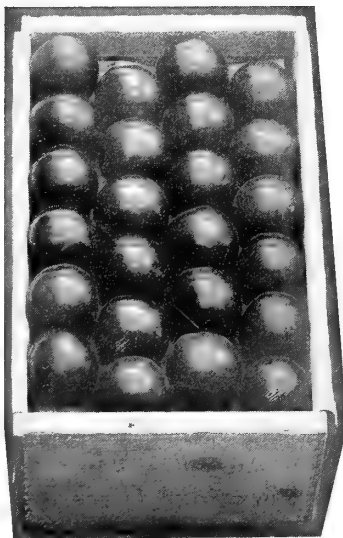
Other places of the Northwest are also profitable for orchards, but in these highlands is the place to live and enthuse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great opportunities for investment.

## Development League

### WHITE SALMON, WASHINGTON

## White Salmon Realty is a Good Investment



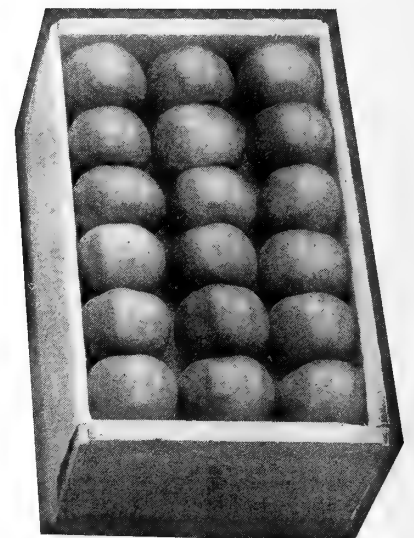
Spitzenberg  
WITHOUT IRRIGATION

### *What Eastern Commission Men Say About Non-irrigated*

## APPLES

"Your non-irrigated apples are unexcelled by even the fine apples of Hood River, and the White Salmon growers should get the very top price for their fruit in the markets of the East. This is certainly a coming apple district."—Wm. Crossley, of the firm of D. Crossley & Sons, apple exporters of New York.

White Salmon offers greater advantages than any other apple district. Why? Because there is more unimproved land to be had, at a cheaper price and on easier terms.



Yellow Newtown  
WITHOUT IRRIGATION

IF YOU ARE LOOKING FOR FRUIT LAND THAT RAISES THE ABOVE DESCRIBED FRUIT, IN ANY SIZE TRACTS, IMPROVED OR UNIMPROVED, CALL ON OR ADDRESS THE

## CONSOLIDATED REALTY COMPANY

WHITE SALMON, WASHINGTON

# DAY BROTHERS

## White Salmon Non-Irrigated Fruit Lands IN LARGE AND SMALL TRACTS

HOMER G. DAY

HERBERT W. DAY

WHITE SALMON, WASHINGTON

APPLES

PLUMS

PEARS

PEACHES

PRUNES

### WHITE SALMON VALLEY THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.

**WHERE APPLES, CHERRIES, PEACHES, PEARS, PRUNES AND STRAWBERRIES  
GROW TO PERFECTION**

A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.

We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap.

WRITE US FOR DESCRIPTIVE MATTER AND PRICES

**ESTES REALTY & INVESTMENT CO.**

White Salmon, Washington

BERRIES

CHERRIES

STRAWBERRIES

NUTS

JONATHANS NEWTOWNS

SPITZENBERGS WINESAPS

## Irrigated Orchard Tracts **Rogue River Valley**



COMPLETED SECTION OF NEW CANAL. ROGUE RIVER VALLEY CANAL COMPANY. WILL IRRIGATE FIFTY-FIVE THOUSAND ACRES

**WRITE FOR THREE REASONS  
WHY THE ROGUE RIVER VALLEY  
IS ENTITLED TO BE CALLED  
THE BEST FRUIT DISTRICT IN  
AMERICA.**

It won the Grand Sweepstakes Prize at the Spokane National Apple Show, and has been declared by government experts to be the most perfect fruit belt in the world.

Every acre of our irrigated orchard tracts carries with it a perpetual water right.

We plant and care for orchards on the yearly or monthly payment plan.

If you would succeed from the start, come to a proven district.

WRITE US FOR FULL INFORMATION

### ROGUELANDS INC.

Fred N. Cummings, Manager

MEDFORD, OREGON

# Cheap Hood River Apple Lands

Arable tracts of first-class apple land can be bought for prices as low as \$50.00 an acre, easy terms. We have good offers to make in Underwood, White Salmon and Lyle, the famous Columbia River non-irrigated districts.

Unimproved land in Underwood \$150.00 an acre, one mile from station on North Bank R. R.; red shot clay soil; no rock; light timber and brush; cost of clearing \$50.00 to \$80.00 an acre. Wonderful view of Mt. Hood and Columbia River Gorge. Improved bearing orchards, 5 to 40 acres.

## JOHN LELAND HENDERSON, Inc.

Portland Office:

J. L. Henderson, 600 Chamber of Commerce.

Hood River, Oregon



Three-year-old Spitzenberg in Rogue River Valley

THE BEST FOR THE LEAST MONEY

## Rogue River Valley, Southern Oregon

This 25-acre tract, 4-year-old Spitzenbergs and Newtown Pippins, at \$500.00 per acre, whole or divided; deep, free, river bottom loam soil; on level automobile road four miles from town, along the beautiful Rogue River. Best of salmon and trout fishing. Best young commercial orchard on the market here.

I have a choice list of bearing and partially developed orchard tracts. Also of deep, free, red shot soil, and of irrigated and sub-irrigated valley and first bench lands, for fruit and general farming, at exceptionally low prices.

Write or call on A. N. PARSONS, Grants Pass, Oregon

References by permission: First National Bank; Grants Pass Banking and Trust Company

# "OREGON IS THE PLACE FOR ME"

## PORTLAND COMMERCIAL CLUB Portland, Oregon

Send me specific information about what Oregon has to offer

- |  |                                     |
|--|-------------------------------------|
| <input type="radio"/> Apple Orchardng    | <input type="radio"/> Hotels        |
| <input type="radio"/> Pear Orchardng     | <input type="radio"/> Resorts       |
| <input type="radio"/> Peach Orchardng    | <input type="radio"/> Schools       |
| <input type="radio"/> Prune Orchardng    | <input type="radio"/> Railroads     |
| <input type="radio"/> Live Stock Raising | <input type="radio"/> Towns         |
| <input type="radio"/> Poultry Raising    | <input type="radio"/> Mining        |
| <input type="radio"/> Truck Farming      | <input type="radio"/> Manufacturing |
| <input type="radio"/> Walnut Culture     | <input type="radio"/> Water Power   |
| <input type="radio"/> Wheat Growing      | <input type="radio"/> Merchandising |
| <input type="radio"/> Dairying           | <input type="radio"/> Berry Growing |
| <input type="radio"/> Timber             |                                     |

Name .....

Street .....

Town .....

State .....

That's what you'll say when you learn specifically just what opportunities Oregon can offer you in *your own line* of endeavor.

The Portland Commercial Club will lend you all the assistance within its power to make you thoroughly acquainted with the possibilities Oregon offers you in your own line. It will tell you specifically what inducements different sections of the state are offering.

In manufacturing—in dairying—in agriculture—in fruit raising—and all other lines, Oregon offers splendid opportunity for great and successful achievement.

Take out your lead pencil or pen—look down the list of industries, and in the little circle opposite the business that interests you most, make a mark, clip out the list and mail it in. In return you will receive valuable and specific information regarding those sections of Oregon peculiarly adapted to your special line. Write a personal letter. Ask questions that come into your mind. They will all be answered fully and comprehensively. Check the list now while you have it in mind.

Portland Commercial Club  
Portland, Oregon

# OKANOGAN IRRIGATION AND IMPROVEMENT CO.

*Capital Stock, \$500,000*

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of water shed on mountain streams furnish an abundant supply of water.

Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

## No Better Fruit Land in the State of Washington

A small block of stock for sale at \$75 per share, par value \$100. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

*Read descriptive article elsewhere in this issue of  
"Better Fruit"*

There is ONLY ONE right way to invest in apple orchards, and that is, to buy in a section that has its reputation firmly established. There is ONLY ONE—

# HOOD RIVER

That raises the longest keeping apple!!

That grows the famous Spitzenberg and Yellow Newtown to a perfection grown nowhere else!!

That has always had the most eminent pomologists rank its apples as having no equal!!

And this, too, without irrigation, and in a community renowned for its social refinement, unequaled conveniences and scenic charm.

Steinhardt & Kelly, of New York, the largest purchasers of fancy packed apples in the world, have this to say of Hood River:

"Within the shadow of Mighty Mount Hood, where the rain and sunshine meet," there grow the finest and most delicious apples in all the wide, wide world. Every apple picked by hand and packed in the most scientific manner under direct and personal inspection.

It only needs hasty comparison to prove that Hood River Valley is asking less for good orchards than other localities far less noted and far less profitable.

## WE HAVE TWO EXCEPTIONAL ADJOINING ORCHARDS FOR SALE ON FAVORABLE TERMS

15 acres—10 acres 2-year-old trees, 2 acres of bearing trees and 3 acres uncleared. Easy clearing.

20 acres—15 acres 2-year-old trees, 3 acres bearing trees, 2 acres uncleared.

Each with a beautiful building site.

Will be sold separately or as a whole, and owners will arrange with purchaser to care for orchard until in bearing, and take our compensation from the bearing orchard.

*For prices and terms, address*

# Hood River Apple Orchards Company

P. O. BOX 165

HOOD RIVER, OREGON



# THE PALMER

## FRUIT PICKING BUCKET



An automatic device for the successful handling of Apples, Pears, Peaches, Cherries, Oranges and Lemons, or any other kind of Fruit or Small Vegetable, without bruising. It has been thoroughly tested and meets every requirement for the careful and convenient handling of fruit that is easily bruised.



"The Palmer Bucket is the best all around bucket, in every particular, that I have ever seen."—Professor H. E. Van Deman.

**The Bucket**—Made entirely of metal. Substantial and durable.

**No Canvas**—The past season exploded the canvas idea. Instead of being a protection, it wrinkled and collected spurs and sticks which scratched and marred the fruit. It was subject to weather conditions and would shrink and stretch. The canvas bottom would sag and the fruit bruise when the bucket was set on the ground.

**No Strings** to stretch, wear out and break and let the fruit drop.

**No Springs** or clamps or levers to get out of order.

**The Release** is simple and easy; no complicated arrangement of straps, strings and levers to tinker with. By a simple rotary movement the bottom is

drawn away and the fruit is gradually and evenly deposited in the box; two buckets leveling a box so that another box may be set on top.

After emptying the bucket the bottom drops automatically into position and the picker is ready for action, without wasting time over straps, loops or puckering strings.

Take up the bucket, from any position, by the handle, and the bottom automatically adjusts itself. All the fruit in the bucket may be discharged or just enough to complete the filling of the box, and the rest taken to another box.

**The Hook** works on a swivel and is always rigid and upright, ready to hook to the ladder or a convenient limb; and when desired can be hooked in a harness and suspended from the picker's shoulders, so he can use both hands. Can be instantly removed.

# The Palmer Bucket Company

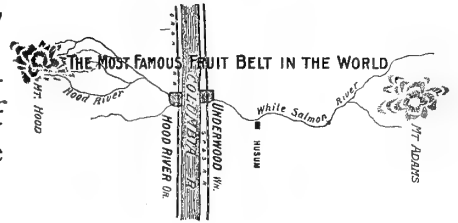
## Hood River, Oregon

# UNDERWOOD

*The Gateway to the Famous White Salmon Valley*

If you want a strictly first-class location for growing high-grade fruit, close to the river and railroad, within sight of the town of Hood River, with the best of everything in the way of shipping and social advantages, call on or write

**W. F. CASH, UNDERWOOD, WASHINGTON**



## G. Y. EDWARDS & CO.

HOOD RIVER, OREGON

*Our Specialties:*

**Fruit Lands, Orchards and Raw Lands**

Get our literature and list of orchards

**WRITE US FOR PARTICULARS**



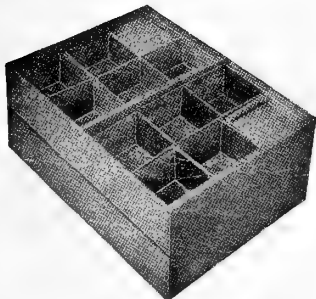
## ASHLAND DISTRICT of the ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent **free** on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.

# NATIONAL FOLDING BERRY BOXES

ALL STANDARD STYLES AND SIZES WITH CRATES TO MATCH



For Market

*None Just as  
Good*

EVERY KNOWN STYLE OF  
FRUIT PACKAGE IS MADE BY

**National Lumber & Box Co.**

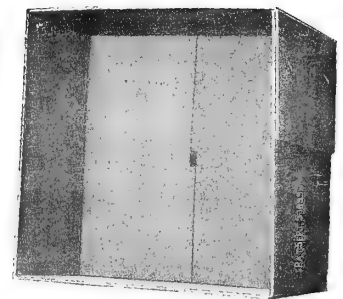
HOQUIAM, WASHINGTON

OUR AGENTS:

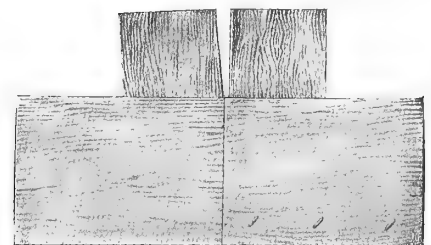
Multnomah Lumber & Box Co., Portland  
H. J. Shinn & Co., Spokane  
Ryan, Newton & Co., Spokane



For Simplicity

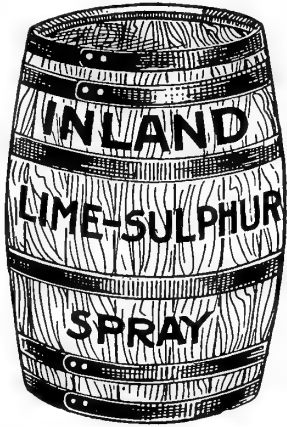


For Filling



For Shipping

**BEST BERRY PACKAGE EVER PRODUCED**



# "INLAND BRAND" Lime-Sulphur

"BETTS" FLUME CEMENT

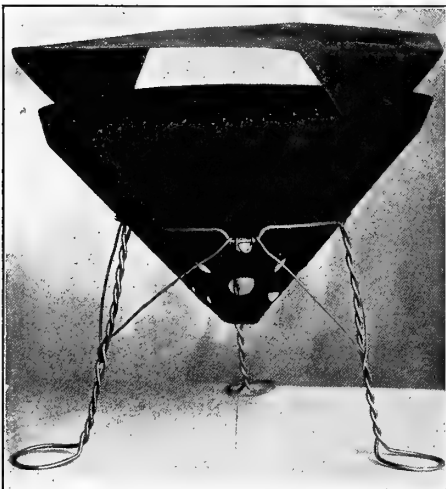
Antiseptics Disinfectants, Etc. Chicken Lice Killer

## THE C. G. BETTS COMPANY

MANUFACTURERS

Erie and U. P. Tracks

Spokane, Washington



## The HEATER THAT MAKES GRAND VALLEY FAMOUS

Millions of dollars worth of fruit has been saved by Ideal Coal Heaters. Big crops were saved when the temperature fell as low as 16 above zero in blooming time. Sixty-five thousand Ideal Coal Heaters were used in Grand Valley alone. Many thousands are sold for spring delivery. Our Jumbo Ideal burns all night without refilling. Ideals are reservoir coal heaters, self-feeding and self-cleaning. You pay for Ideals no matter what heater you use. If you use none you pay for Ideals many times. Better use them. We have sold many of our old customers heaters this year.

QUICK HEAT                      GREAT VOLUME  
GREAT OUTWARD RADIATION                      BIG CROPS SAVED  
VERY SMALL EXPENSE

Send 50 cents for sample. Reliable agents wanted. Write today.

The Ideal Orchard Heater Co.

Grand Junction, Colorado

## SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

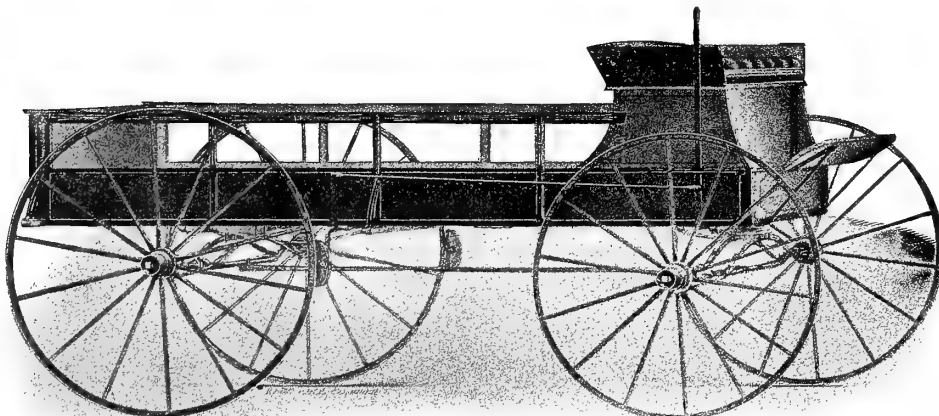
WHOLESALE AND RETAIL DEALERS IN

### *Vehicles and Implements*

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY



Four-year-old Cherry Trees, Fairview Orchards, The Dalles, Oregon, R. H. Weber, Owner  
RAISED AND MAINTAINED WITH THE

# KIMBALL CULTIVATOR

Great  
Weeds and Ferns  
Exterminator

Office and Factory, 811 East Second Street  
Long Distance Phone, Main 3671



Hood River, Oregon,  
February 26, 1910.

Mr. R. H. Weber,  
The Dalles, Oregon.

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard,  
Editor "Better Fruit."

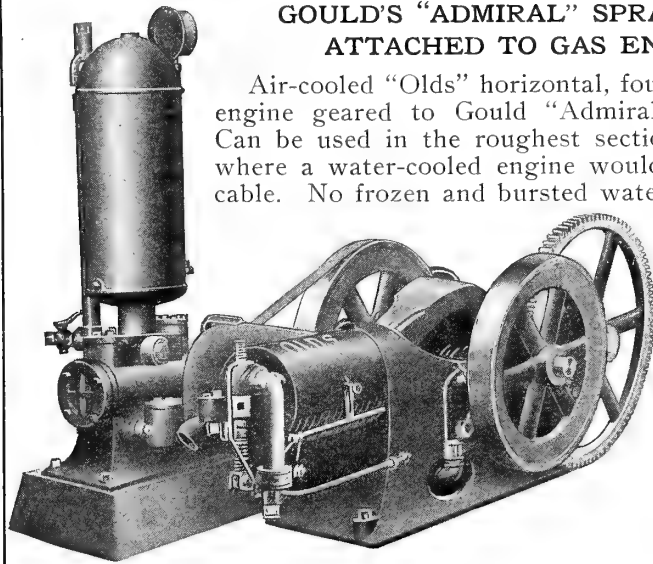


NINETY PER CENT HOOD RIVER ORCHARDISTS USE THIS MACHINE  
SEND FOR ILLUSTRATED DESCRIPTIVE CIRCULAR

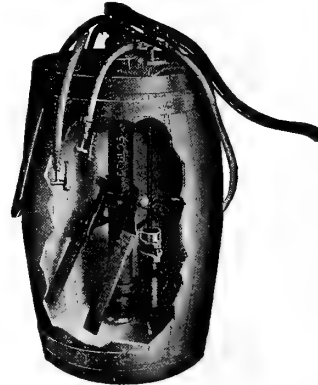
**JOHNSTON & WEBER, Manufacturers, The Dalles, Oregon**

### GOULD'S "ADMIRAL" SPRAY PUMP ATTACHED TO GAS ENGINE

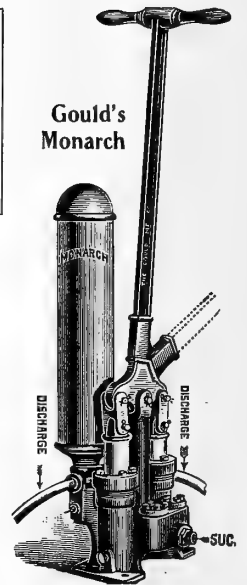
Air-cooled "Olds" horizontal, four-cycle gasoline engine geared to Gould "Admiral" spray pump. Can be used in the roughest section on side hills where a water-cooled engine would not be practicable. No frozen and bursted water jackets.



Write for valuable free booklet No. 204, on How to Spray and When to Spray. Ask our spray man for any information he can give you—he speaks from wide experience.



Gould's  
Monarch



#### Our Experience

Has satisfied us that the Olds Engine is the ideal one for general purposes, but we will equip our spray outfits with any engine desired.

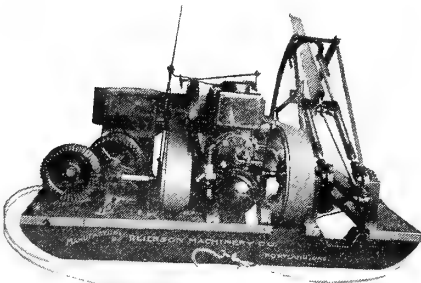
## GOULD'S SPRAYERS

Recommendations of leading fruit men, experiment stations, and our twenty years' experience all coincide to make us endorse Gould's line of hand and power sprayers as better adapted to Pacific Coast needs than any other spraying apparatus. WE CONSIDER GOULD'S GOODS ALL PUT UP ON HONOR. Ask the man who is using a Gould why he never buys another. He'll say a Gould won't wear out, and if he wanted any pump at all he would take another Gould. The Gould is the cheapest, as it doesn't cost anything for repairs. Ask the man who sells pumps what the purchaser of a Gould pump says. All the same story—made right—work right—wear right. We see that they are sold right.

**PORTLAND SEED CO.**  
PORTLAND, OREGON

SPRAYS  
SPRAYING MATERIAL  
AGRICULTURAL SUPPLIES

#### KING OF THE WOODS



45 CORDS SAWED  
IN ONE DAY

## POWER DRAG SAW

Saves money and backache. Weighs only 1,600 pounds, with 4-horsepower Waterloo engine, water-cooled. Can be operated by one man. Pulls itself forward and backward, up hill or down hill; lots of power and some to spare. Uses only 4 gallons distillate per day, which costs 8½ cents per gallon. Get our descriptive catalogue and prices.

**Reierson Machinery Company**  
PORTLAND, OREGON

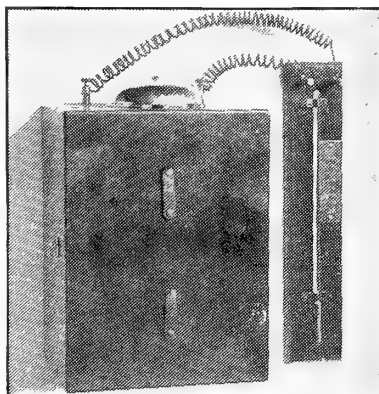
WATCH THIS  
SPACE FOR  
CUT OF OUR  
IMPROVED  
POWER SPRAYER

WRITE  
FOR  
PRICES

## Have Your Own Weather Bureau

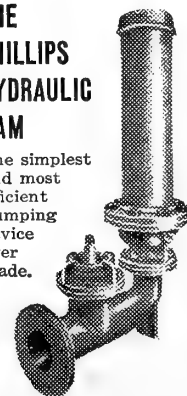
Get a Cedarborg Frost Alarm and be sure and to get your frost warning in time. Write and let us tell you how to save money by getting your order in before the rush.

The  
**Cedarborg Engineering Co.**  
808 Twentieth Street, Denver, Colorado



Your Water Supply Secured  
**THE PHILLIPS  
HYDRAULIC  
RAM**

The simplest  
and most  
efficient  
pumping  
device  
ever  
made.

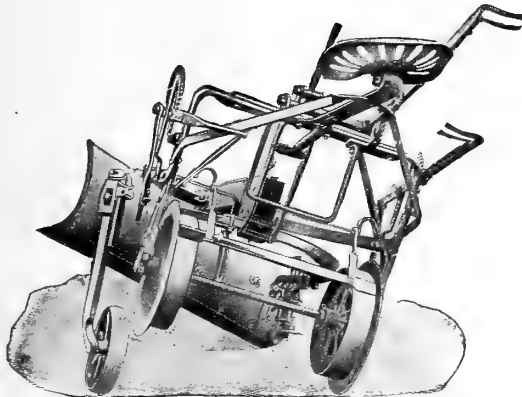


**RAMS**  
For Pressure  
or Overhead  
Tank Systems  
**BIG RAMS**  
For  
**IRRIGATION**  
The Phillips  
Hydraulic Ram  
Company

Office:  
419 Lumber Exchange  
Building  
Portland, Oregon



# 20th Century Grader and what it will do for you



*Notice Grader has only two wheels. Both behind blade. Flanged wheels prevent side draft.*

The 20th Century Grader is the  
Irrigator's Best Friend.

## It Will

Cut Laterals for Irrigation.  
Make Shallow Drainage Ditches.  
Cut Side Ditches.  
Level Fields for Irrigation.  
Slash Off Sage-Brush.  
Clean Laterals and Throw Borders.  
Throw Up Dikes for Rice Farming.  
Grade and Crown Roads.  
Maintain Gravel and Dirt Roads.  
Move Dirt anywhere and drop it  
anywhere you want it.

It is the most all-around serviceable machine you can have on your place—saving time, money and labor at every turn.

It also saves you the cost of several expensive machines that you have to have, although you use them but once a year.

## Convenient and Economical

The 20th Century Grader is the original one-man machine. It is built of steel and weighs but 600 pounds. With one man and two horses it will do the same work with less effort in half the time required by the big 2,000-pound graders with two men and four or six horses. This makes it wonderfully economical.

Besides light draft, the 20th Century is built right. Every part made to stand its proportionate strain. The pull of the team concentrates at the point of the blade. Every ounce of power goes against dirt.



## Solves Every Irrigation Problem

### BETTER AND EASIER AND CHEAPER

Make your year's work count. Get bigger returns with lighter work by using modern steel machinery

Let us send you descriptions and actual photographs of these machines at work. Let us tell you what other people say who use them.

Send the attached coupon today and detailed information will come to you at once.

## The Baker Manufacturing Co.

FISHER BUILDING

CHICAGO, ILLINOIS

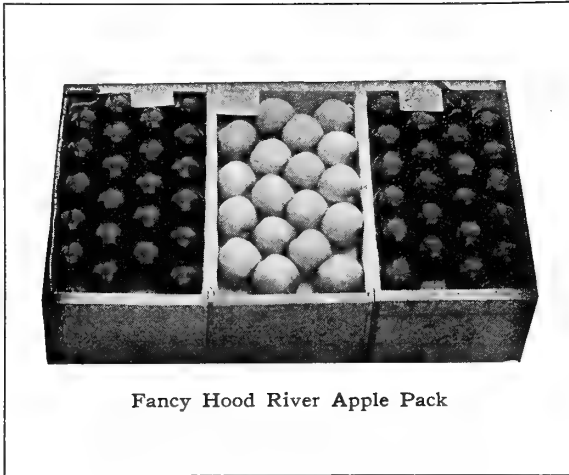
The Baker Manufacturing Company  
Chicago, Illinois

I am interested in the profits your agents are making on the 20th Century Grader.

Please send me your confidential proposition made to 20th Century agents.

Name .....

Address .....



Fancy Hood River Apple Pack

# HOOD RIVER

*Won the Grand Sweepstakes Prize at the National Apple Show, also First Prize on Car Load of Spitzenbergs and First Prize on Car Load of Yellow Newtowns*

This proves again the superiority of the Hood River apple. Not only do they capture first prizes wherever exhibited, but every year the Hood River apples are the first ones sold, and always bring the top prices.

Make your home in Hood River. Get in with the winners and be sure of a good profit for your labor. Send for our list of orchard tracts and business opportunities.

## J. H. HEILBRONNER & CO.

THE RELIABLE DEALERS

The Davidson Building

HOOD RIVER, OREGON

THE COMMERCIAL WORLD RECOGNIZES  
THE FACT THAT

# HOOD RIVER VALLEY

Produces an apple that has superior keeping qualities over apples of any other district; it also recognizes the fact that the HOOD RIVER APPLES bring a higher price per box than apples grown elsewhere.

The general impression regarding land values of our valley is wrong, prospective buyers believing that values at HOOD RIVER are higher than any other fruit district; but it is a fact that the PRICES of most of the improved districts are HIGHER than they are in our beautiful valley. The highest sale per acre that has been recorded was \$1,950. It consisted of 6 acres 8-year-old Spitzenberg and Newtown, 4 acres of 5-year-old of same variety, with \$2,000 improvements.

With \$1,500 to \$5,000 capital you can buy the kind of a home you are looking for. Improved places, which will pay their way out, can be bought for quarter to half down, balance on or before five years.

Raw land sells from \$75 to \$300 per acre, owing to location, drainage, etc. We have on our lists raw land, lies practically perfect, red shot soil, which can be bought in 10-acre tracts at \$150 per acre.

One of the best buys in Hood River Valley for a home or investment of highly improved property consists of 20 acres, ideally located, all set to commercial orchard 2 to 6 years old. Good house and barn, good team, wagon, hack, new steam spraying outfit, complete set of farm implements. Price \$15,000; \$5,000 cash, balance 3 or 5 years.

FOR INFORMATION REGARDING HOOD RIVER WRITE

## DEVLIN & FIREBAUGH

THE LEADING DEALERS

Swetland Building, Portland, Oregon

Hotel Oregon Building, Hood River, Oregon

See the Newtown page

# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## THIRD NATIONAL APPLE SHOW, SPOKANE-CHICAGO

BY AUGUST WOLF, SPOKANE, WASHINGTON

**P**ERHAPS the most significant result of the two National Apple Shows: In Spokane, November 14 to 19, and in Chicago, November 28 to December 4, is the interest aroused in commercial districts in Washington, Oregon, Idaho, Montana and British Columbia. From publicity and artistic viewpoints the expositions were gratifyingly successful and taken all in all it was the best exploitation the apple ever had, next to the story of its first appearance in the Garden of Eden. Moreover, the people of the Mississippi valley country and the states to the east, south and north, have better acquaintance with the apple belts of the Northwestern and Pacific states than ever before.

The Chicago show, which was installed in the First Regiment armory at Sixteenth street and Michigan avenue, was attended mostly by men and women who have money to invest and others who are looking for homes in the country. The representatives of the various districts that entered displays were there with statistics, photographs and vivid word pictures of the exact state of things in the pomological history of the Northern and Western states and they were besieged from morning until night by eager inquirers, seeking knowledge at first hand of the various districts, where, surface indications are, many will cast their lot in the near future.

The carlot displays, winners of the chief prizes headed by the grand championship car exhibited by C. H. Sproat, of Hood River, Oregon, were viewed with interest by thousands, who marveled at the color, size and uniformity of the fruit; but it is conceded that the district booths were the centers of attraction, largely because of the fact that spectators were able to grasp the extent and importance of the fruit-growing industry in the Western states through having the evidence in concrete form before them and listening to the talks by growers.

No one is in position to foretell the extent of the influx of capital and desirable settlers into the Pacific country as the result of the apple shows, but it is not overstating it to say that every district is bound to receive a hundred fold for every dollar expended in making the enterprises what they were. In fact, if only one out of every hundred men and women who evidenced interest in the opportunities, advantages and possibilities of the Western country crosses to the

west side of the Rocky mountains, the result will be apparent on all sides.

Some might suggest that the new habit—this widespread talk about apples and apple lands—is due entirely to the Spokane and Chicago shows. That is not true. It is too general to make such claims. The shows doubtless helped much, but they did not start the whole "back to the land" movement. They simply confirmed the reports given in print or by word of mouth of the marvelous development of the apple-growing industry and the rapid and substantial strides made in the Northwest. And as such they proved their value a thousand fold. In fact, it may be said without fear of contradiction that the crumbs cast upon the waters will return in the shape of large loaves in a short time.

Those identified with the shows, which cost the people of Spokane more than \$85,000 this year, believe that the results accomplished, fully justify the expenditures. They also point to the fact that many Eastern and Middle Western cities, including Minneapolis, Kansas City, Harrisburg, Philadelphia, Atlanta,

### Contents

THIRD NATIONAL APPLE SHOW,  
SPOKANE-CHICAGO, 23

CANADIAN NATIONAL APPLE SHOW  
VANCOUVER, 28

MISSOULA'S WESTERN MONTANA  
APPLE SHOW, 37

OREGON SHOW EXCELS ALL PREVIOUS  
DISPLAYS, 39

THE NATIONAL HORTICULTURAL  
CONGRESS SHOW, 43

APPLE ANNUAL AT WATSONVILLE,  
CALIFORNIA, 48

GRAVENSTEIN SHOW, SEBASTOPOL,  
CALIFORNIA, 57

THE FOURTH ANNUAL ALBANY  
APPLE FAIR, 60

GRAFTING AND TOP WORKING OF  
FRUIT TREES, 62

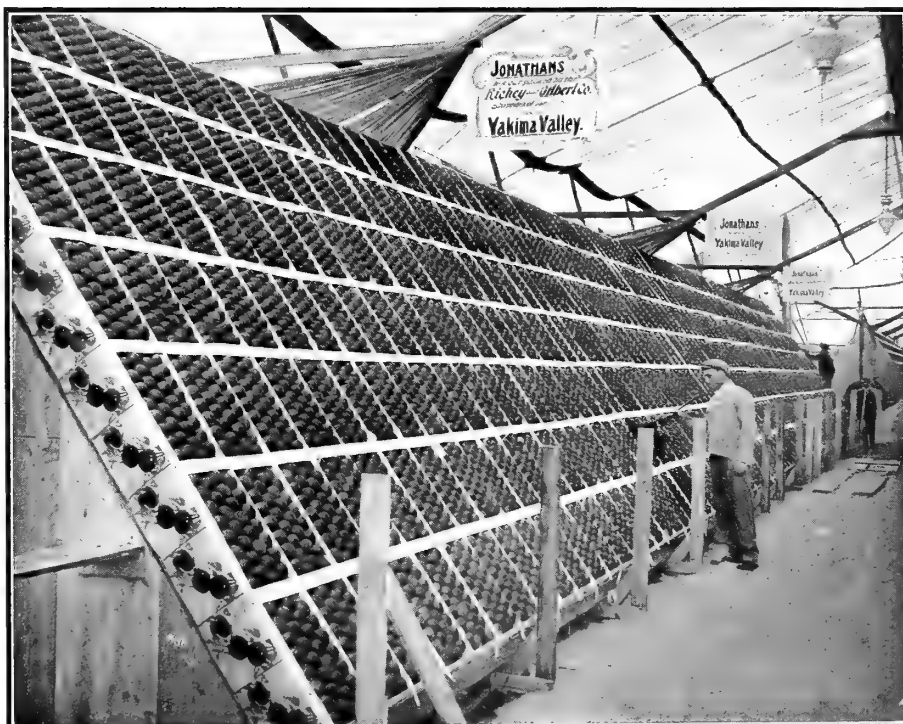


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

FIRST PRIZE CARLOAD OF JONATHANS, GROWN BY J. S. BAIRD, SUNNYSIDE, WASHINGTON. THIRD NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, AND CHICAGO, ILLINOIS, NOVEMBER 28-DECEMBER 4, 1910



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

OROVILLE, WASHINGTON, DISTRICT DISPLAY, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

NATIONAL APPLE SHOW SPECIAL LEAVING SPOKANE, WASHINGTON, FOR CHICAGO, ILLINOIS, MONDAY, NOVEMBER 21, 1910, SECOND SECTION FOLLOWING LATER WITH EXHIBITORS. THE LAST CAR BEING USED FOR THE OFFICIALS OF THE APPLE SHOW

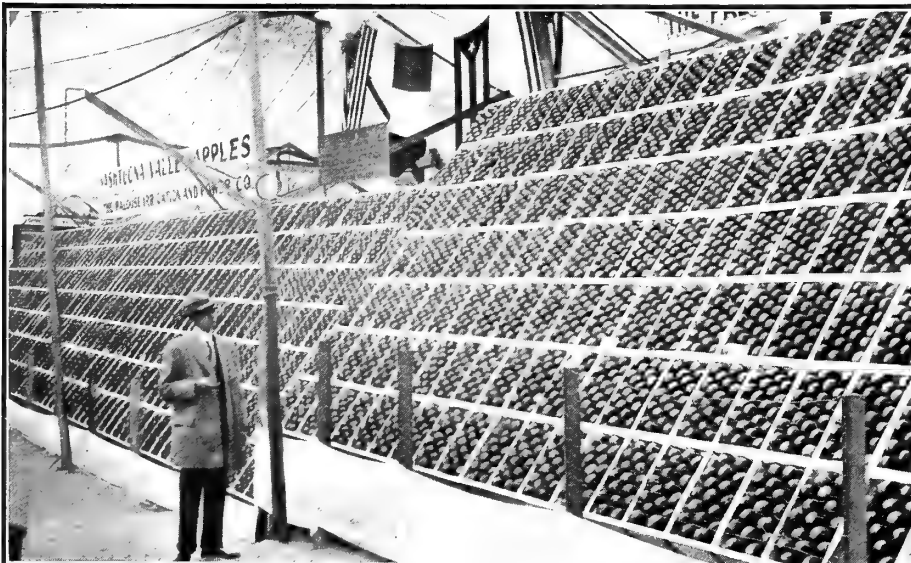


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

CARLOAD OF APPLES FROM WASHTUCNA VALLEY, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910

Boston, New York and Detroit, are working to have shows in their cities in 1911, pledging every support and co-operation. Another thing brought out is that a permanent building must be erected to house the fourth annual competitive exposition in Spokane.

E. F. Cartier Van Dissel, first vice-president and chairman of the board of trustees of the National Apple Show, Inc., says that while Chicago will never have another opportunity to see the Spokane exposition, it is likely a circuit will be established to take in a half dozen important Eastern cities.

"The Chicago show was operated at a financial loss, as we expected it would be," Mr. Van Dissel said, "but the exhibitors were highly satisfied with the results. Considering the opposition of The Chicago Tribune and the United States Land and Irrigation Congress, backed by that publication, our exhibition was a magnificent success, and the Northwest was amply repaid in the splendid publicity it received in other mediums, notably The Inter Ocean, The Record-Herald, The Examiner, The American, The Post, The Journal, The Daily News, Chicago Commerce, Morrison's Chicago Weekly, The Drovers' Journal and hundreds of daily and weekly publications in the Central West."

Many of the exhibitors sold their displays to commission houses and department stores at good figures, while others disposed of their products direct to restaurants, hotels and fruit dealers.

Chief interest at the Third National Apple Show in Spokane, centered in the sweepstakes event on carlot entries.



HOWARD ELLIOTT

President Third National Apple Show, Spokane, Washington, and Chicago, Illinois.  
Also president Northern Pacific Railway.





Photo by Frank Palmer, Spokane

Engraved by American Engraving Co., Spokane  
ARTISTIC LIMITED DISPLAY BY R. H. FORTUNE, SALMON ARM, B. C.

Winning first prize Canadian National Apple Show, Vancouver, British Columbia, 1910, and second prize at National Apple Show, Spokane, Washington, November, 1910, and Chicago, Illinois, November 28 to December 4, 1910.

There were 21 entrants. The winners were announced as follows:

Grand Championship—C. H. Sproat, Hood River, Ore., Spitzenberg (997), first prize, \$1,000, Chicago Association of Commerce, cup, valued at \$500, and \$250 for first on variety; Hinman & Grandy, Cashmere, Wash., Spitzenberg (991), second prize, \$300.

Winesap—H. M. Gilbert, North Yakima, Wash., first prize, \$250; O. G. France, Wenatchee, Wash., second, \$100.

Wagner—Spokane Valley Irrigated Land company, Spokane, Wash., first prize, \$250; no second.

Rome Beauty—R. P. Wright, Chelan, Wash., first prize, \$250; J. Howard Wright, North Yakima, Wash., second, \$100.

Yellow Newtown Pippin—Avery Bros., Hood River, Ore., first prize, \$250, also International Apple Shippers' Association silver trophy; A. D. Helms, Ashland, Ore., second, \$100.

Mixed—Arkansas Black and Winesap, Dick Hart, Toppenish, Wash., first prize, \$250; C. C. Georgeson, Prosser, Wash., second, \$100.

Jonathan—J. T. Baird, Mabton, Wash., first prize, \$250; no second.

There were no entries for the McIntosh carload prize.

Avery Brothers also were awarded a silver scroll, presented by Messrs. Simons and French, for the best exhibit of Yellow Newtown Pippins. A. D. Helms received the International Apple Shippers' Association trophy for the best car.

There were numerous artistic displays. In the Two-and-two contest the Chamber of Commerce of Ellensburg, Wash.,



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
DEMONSTRATION OF ENTOMOLOGY AND BOTANY BY WASHINGTON STATE AGRICULTURAL COLLEGE OF PULLMAN, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE

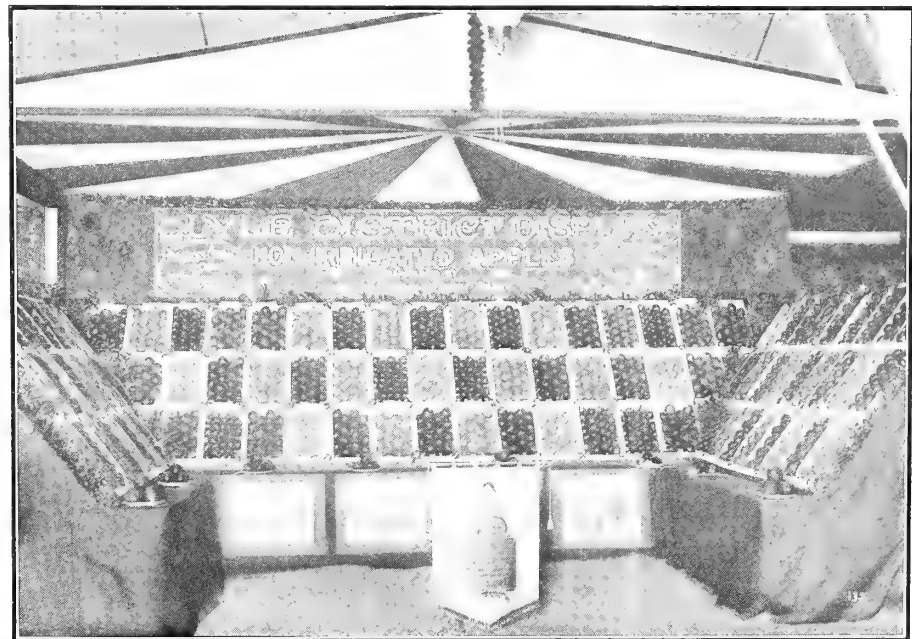


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
FIRST PRIZE NON-IRRIGATED DISTRICT DISPLAY FROM LYLE, WASHINGTON, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
YAKIMA COUNTY, WASHINGTON, DISTRICT DISPLAY, THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS





Engraved by The American Engraving Company, Spokane

METHOW VALLEY, WASHINGTON, DISTRICT DISPLAY, THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

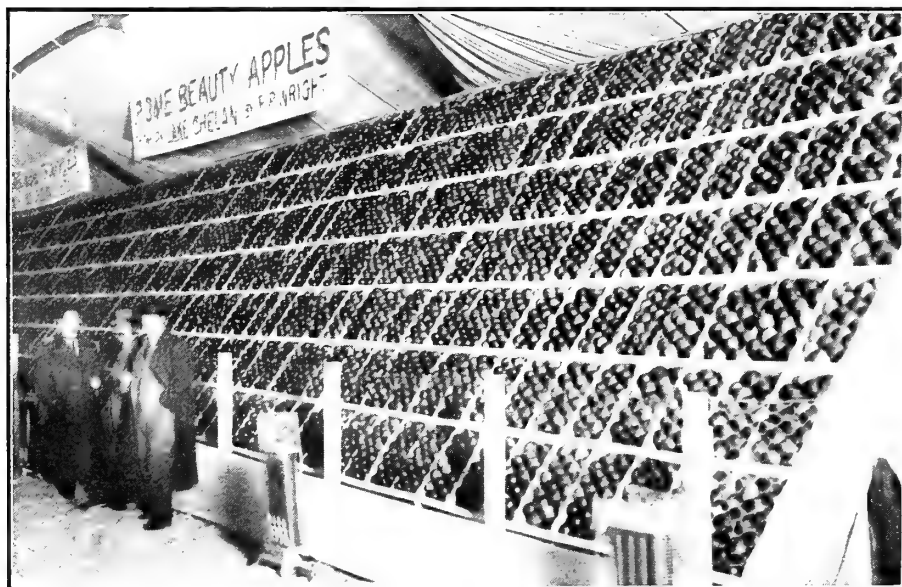


Photo by Frank Palmer, Spokane Engraving by American Engraving Company, Spokane  
FIRST PRIZE CARLOAD OF ROME BEAUTIES FROM LAKE CHELAN, WASHINGTON, GROWN BY R. P. WRIGHT. NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Photo by Frank Palmer, Spokane Engraving by American Engraving Company, Spokane  
PROSSER, WASHINGTON, DISTRICT DISPLAY AT THE THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910  
The Washington State Horticultural Society meets at Prosser this month.

captured the first honors, \$200, a gold medal banner and the J. C. Pearson company, silver cup. R. H. Fortune, of Salmon Arm, B. C., was second.

John Hakel, of Hood River, Ore., won a prize of \$50 for the best exhibit in the Western states special. The Palouse Irrigation and Power Company, of Hooper, Wash., was second. R. H. Fortune, of Salmon Arm, B. C., won the first prize, \$75, in the foreign country special.

The Commercial Club, of Walla Walla, Wash., won the first prize for the best general collective display of apples grown on irrigated land. The Commercial Club, of Cashmere, Wash., was second. The Business Men's Association, of Lyle, Wash., was first in the non-irrigated display contest, Spokane county being second.

The prize for the exhibit coming the longest distance was awarded to William S. Teator, Upper Red Hook, N. Y., 3,019 miles.

Tedford Brothers, of Wenatchee, Wash., received the H. Woods Company trophy for winning the most prizes of all kinds.

The apple packing contest brought out 45 entrants. Charles Mason, of Spokane, was declared the champion, scoring 378 of a possible 400 points. W. L. Dresbach, of Mosier, Ore., was second with 370 points, C. L. Green, of Wenatchee, Wash., being third with 362 points.



Engraved by Hicks-Chatten Co., Portland, Oregon

C. H. SPROAT

Winner of the sweepstakes prize for best carload of apples at the National Apple Show, Spokane, \$1,000, and winner on the same car for the best carload of Spitzenbergs, \$250, and winner at the Spokane National Apple Show of the solid silver trophy cup given by the Association of Commerce Chicago, valued at \$500. Mr. Sproat has been for many years secretary of the Hood River Apple Growers' Union and this year was elected to the position of manager. Mr. Sproat has been for years a successful apple grower in Hood River Valley, owning fifty acres, one of the finest apple orchards in the valley.

F. L. Post and Sons, of Chelan, Wash., received \$100 for a pyramid of 50 apples, weighing 79 pounds 15 ounces; second, Lorr and Ball, Methow, Wash., 78 pounds 13 ounces. Lorr and Ball also were awarded \$25 and the Neely and Young cup for the largest single apple; B. M. Chapman, of Cashmere, Wash., was second.

These awards were made in the 10-box contests:

Arkansas Black—A. W. Simons, Free-water, Ore., first; Tedford Brothers, Wenatchee, Wash., second.

Baldwin—C. F. Fullerton, Otis Orchards, Wash., first; B. L. Smith, Okanogan, Wash., second.

Delicious—T. J. Black, Wenatchee, Wash., first; Wenatchee Orchards-Bonds Company, Cashmere, Wash., second.

Grimes' Golden—John Bengel, Spokane, Wash., first; no second.

Jonathan—Robert Johnson, North Yakima, Wash., first; T. J. Black, Wenatchee, Wash., second.

McIntosh Red—C. L. Greene, Wenatchee, Wash., first; J. C. Wood, Kalispell, Mont., second.

Rhode Island Greening—C. L. Green, Wenatchee, Wash., first; John Hakel, Hood River, Ore., second.

Rome Beauty—R. McRae, Walla Walla, Wash., first; B. M. Chapman, Cashmere, Wash., second.

Spitzenberg—G. M. Adams, Brewster, Wash., first; Palouse Irrigation and Power Company, Hooper, Wash., second.

Stayman Winesap—T. J. Black, Wenatchee, Wash., first; no second.

Wagener—A. Schaefer, Chester, Wash., first; E. Remy, North Yakima, Wash., second.

White Winter Permain—William Tedford, Wenatchee, Wash., first; J. Howard Wright, North Yakima, Wash., second.

Winesap—H. M. Gilbert, North Yakima, Wash., first; Tedford Brothers, Wenatchee, Wash., second.

Yellow Newtown Pippin—John Hakel, Hood River, Ore., first; C. L. Green, Wenatchee, Wash., second.

Winter Banana—F. L. Pugh, Peach, Wash., first; George Spencer, Entiat, Wash., second.

John Hakel, of Hood River, Ore., won the Portland Commercial Club trophy for the best 10 boxes grown by an Oregon exhibitor.

H. M. Gilbert, of North Yakima, Wash., was first in the 10-box pack contest; William Tedford, of Wenatchee, Wash., was second.

Scores of prizes were awarded in five, four, three, two and single box contests and there were 600 prizes on plate exhibits.

Professor H. E. Van Deman, of Washington, D. C., had charge of the board of judges, composed of J. W. Murphy, of Glenwood, Iowa, James Gibb, of Kelowna, B. C., Professor S. A. Beach, of Ames, Iowa, and C. J. Sinsel, of Boise, Idaho. Professor A. P. Bateham, of Moiser, Ore., was chief of the judges on pack.

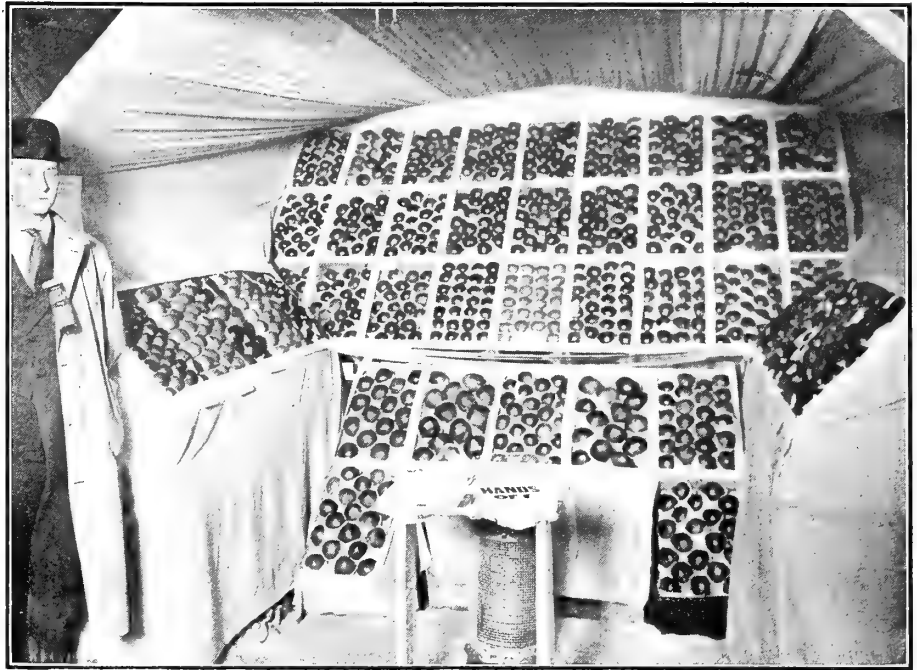
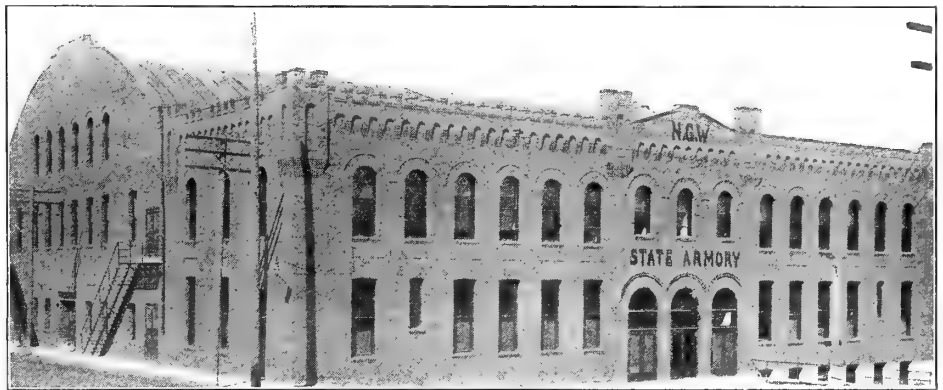


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

OREGON CITY, OREGON, COMMERCIAL CLUB DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910



EXTERIOR VIEW OF ARMORY BUILDING, SPOKANE, WASHINGTON

Additional to this, many acres surrounding it were covered with temporary buildings, in which was held the Third National Apple Show, Spokane, Washington, 1910.



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

SHOSHONE, IDAHO, DISTRICT DISPLAY AT THE THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910

# CANADIAN NATIONAL APPLE SHOW, VANCOUVER

BY MAXWELL SMITH, EDITOR FRUIT MAGAZINE AND MANAGER OF THE SHOW, VANCOUVER, B. C.

**W**E claim that the First Canadian National Apple Show was the greatest in the world's history, not only because it was the largest collection of strictly exhibition apples, but because it was the best in quality of exhibits, artistic arrangement, staging, lighting, decorating and general education value. These features, together with the high-class musical entertainment furnished by the 48th Highlanders Band, and the total absence of side-shows, fakirs, and the usual circus features of

the ordinary fall fair, gave a dignity and class to the whole affair of which the management may well feel justly proud.

The show was national in every sense of the term, and might with due modesty be designated as the first really National Apple Show ever held, because there were exhibits present from every apple-growing province in Canada, and the Federal Government not only recognized it by contributing toward the expense, but sent an educational exhibit in charge of a special commissioner.

Notwithstanding extremely disagreeable weather during the entire week, the attendance was good, and the interest increased daily to the end.

The gates were opened to the public promptly at 9 o'clock on the morning of Monday, October 31st, and long before the official opening, which took place at 2:30 in the afternoon, every inch of standing room in the great buildings was occupied, and the spacious galleries surrounding the arena packed to their utmost capacity.

The grand procession started from the Vancouver City Hall at 1:30, and as the platoon of mounted police, followed by the 48th Highlanders, turned the corner on to Hastings street, the assembled crowds burst forth with cheers of delight and enthusiasm, the clamor fairly reaching the height of a tumult. Then followed a long line of automobiles, in which were seated the board of management of the Apple Show, judges, representatives of the Dominion and Provincial Governments, City Council, Board of Trade and many distinguished visitors. Next came the bugle band escorting the Lieutenant-Governor's carriage, who was accompanied by his private secretary, his worship Mayor L. D. Taylor,



Engraved by Hicks-Chatten Co., Portland, Oregon

FIRST PRIZE DISTRICT DISPLAY, WON BY BOARD OF TRADE, KELOWNA, B. C.  
CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

EXHIBIT OF APPLES FROM EVERY PROVINCE OF CANADA, BY THE DOMINION DEPARTMENT OF AGRICULTURE, FIRST CANADIAN NATIONAL APPLE SHOW VANCOUVER, B. C., 1910



MAXWELL SMITH  
Manager First Canadian National Apple Show,  
Vancouver, British Columbia.

and the Bishop of Westminster. Following this was another long line of citizens in automobiles and carriages, the band of the Sixth Regiment D. C. O. R., boy scouts, the fire department, and many other private equipages. Arriving at the National Apple Show buildings via Hastings, Granville, Nelson and Gilford streets, which were lined with enthusiastic spectators throughout, the speakers of the day made their way to a specially constructed platform at the west end of the great arena.

There were seated with Mr. J. N. Ellis, vice-president of the Apple Show Association, His Honor Lieutenant-Governor Paterson, Mr. Musket (the Lieutenant-Governor's private secretary), Bishop De Pencier, Hon. R. McBride, Hon. W. J. Bowser, Mayor Taylor, Mr. H. A. Stone (representing the Board of Trade), Mr. Elliott S. Rowe (secretary of the Vancouver Tourist Association), Mr. Ralph Smith, M. P., Mr. Maxwell Smith (manager of the National Apple Show), Mr. A. E. Lees (chairman of



the Park Board), Mr. W. E. Scott (Deputy Minister of Agriculture), Mr. J. S. Thompson (representing the Trades and Labor Council), Mr. J. A. Ruddick (Dominion Dairy Commissioner), and Mr. T. F. Paterson.

Mr. J. N. Ellis presided, and called on the Bishop of Westminster to make the opening invocation, which was very impressively done, Bishop De Pencier's fine voice being heard clearly throughout the building.

Mayor L. D. Taylor, in welcoming the visitors on behalf of the city, said it was a great day of the city, the Province and the Dominion, and it was with a feeling of pride that they recalled that the idea of a Canadian National Apple Show was born in the mind of a Vancouver man—(applause)—and that it should have taken a definite form in this city. To his mind it was an expression more than could be uttered in words of Vancouver's recognition of the fertility of the lands adjacent. The West had long been famous for its fruit production. Throughout the world the fame of California was known long ago, and today in British Columbia apple was king. They heard much of Canada as a nation, and in this show was British Columbia's acknowledgment of that sentiment.

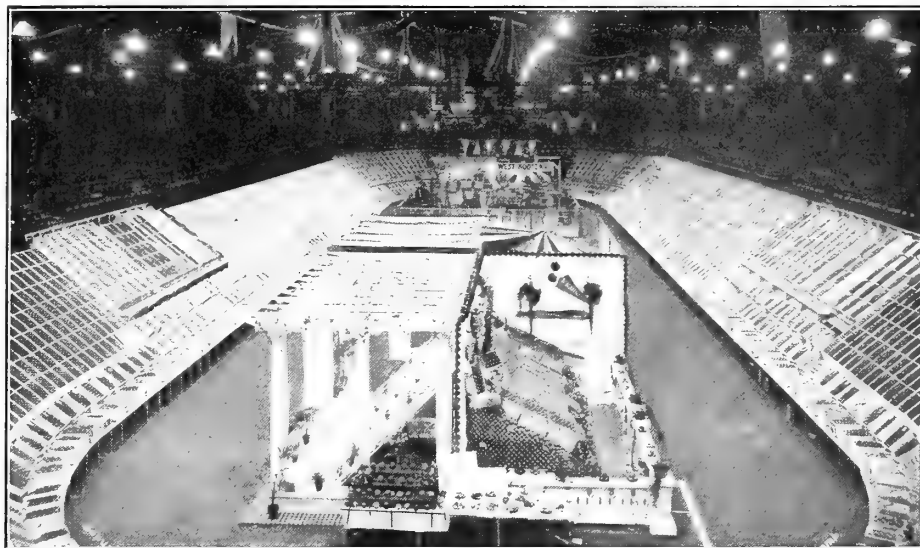
"In looking over this show," said the Mayor, "I am less disposed than ever to blame Mother Eve for the apple episode. And I am glad to say that since the inception of this show the apple of discord has not been in evidence. Paris had an easy task in awarding the apple compared with what the judges of this show will have in deciding between so many first-class exhibits."

Hon. R. McBride, Premier of British Columbia, on rising to welcome the visitors on behalf of the Province, was given a very hearty reception. He said it gave him particular pleasure to assist in the opening of such a magnificent exhibition in the city of Vancouver, because the people of the Province, whether they came from Kootenay or the northwestern sections, always claimed that the city of Vancouver was the great commercial center of British Columbia, typical of all that enthusiasm and energy that had done so much to build up Western Canada.

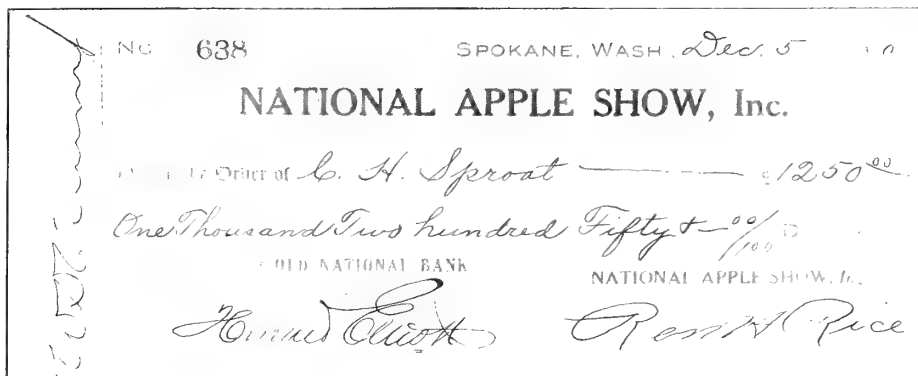
"When this Apple Show was first mentioned," said the Premier, "it was acknowledged that the undertaking must be one of great magnitude—for the management. Fancy this Province, which a few years ago was not known as a fruit-growing country, in this year 1910 having the enterprise and courage to launch the first National Apple Show. But those of us who know the country and its possibilities felt sure from the start that the management, with that unbounded faith in the country they have shown, was bound to make this (as Mr. Ellis tells me it is) the greatest show of its kind in the history of the world. (Applause.) When Vancouver undertakes anything she always makes good, and this show is one of the most attractive illustrations of this that could be given to the world at large.



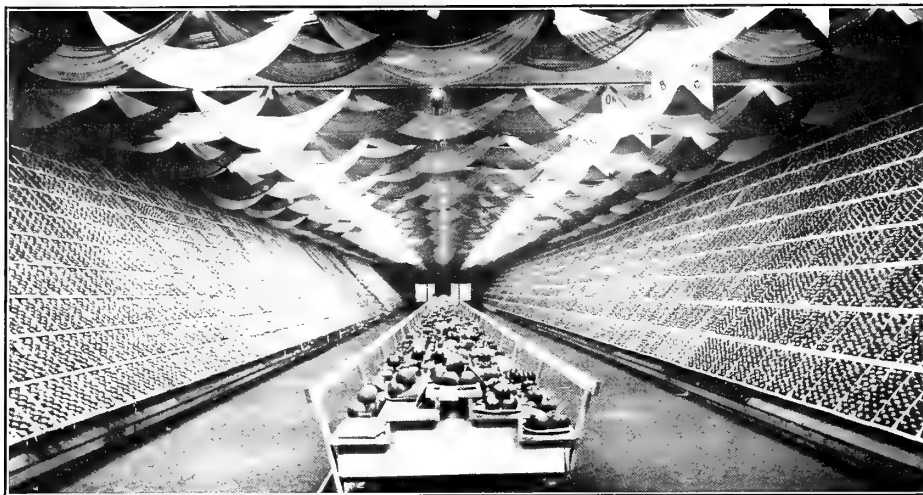
Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
DISTRICT DISPLAY FROM KAMLOOPS, B. C., FIRST CANADIAN NATIONAL APPLE SHOW  
VANCOUVER, B. C., 1910



Engraved by Hicks-Chatten Co., Portland, Oregon  
GRAND VIEW OF EXHIBITS ARRANGED IN THE ARENA OF THE HORSE SHOW BUILDING  
AT THE FIRST CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910  
Showing in the circle the two carloads, Spitzenbergs and Grimes Golden, from Yakima, Washington, the carload from Grand Forks, B. C., and the ten, five and one-box exhibits. In the center are shown the different district displays.

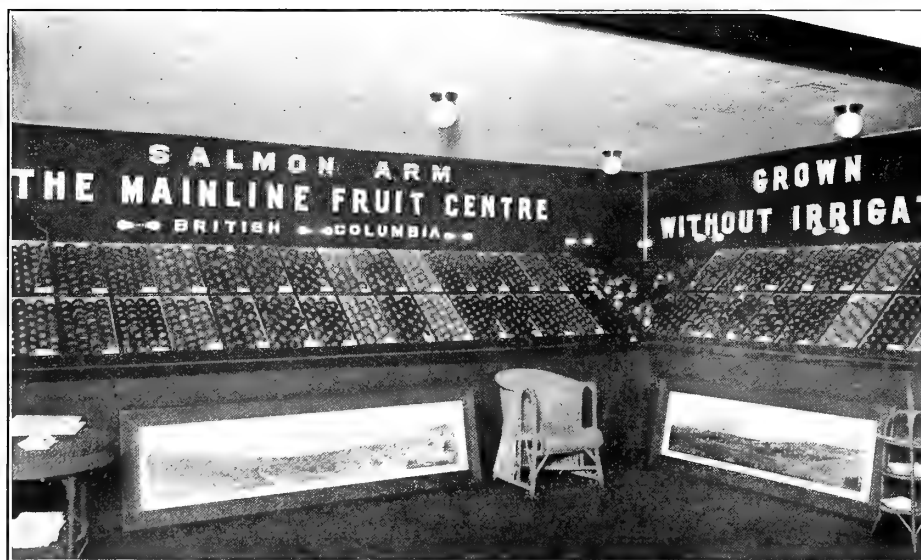


Engraved by Hicks-Chatten Co., Portland, Oregon  
CHECK PAID TO C. H. SPROAT, HOOD RIVER, OREGON, BY NATIONAL APPLE SHOW  
This check represents the first prize of \$1,000 for the sweepstakes car and the first prize of \$250 for the best carload of Spitzenbergs at the National Apple Show, Spokane, Washington



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

VIEW OF THE ANNEX OF THE CANADIAN NATIONAL APPLE SHOW, VANCOUVER, 1910  
This view shows the carloads from Summerland, Kelowna, Vernon and Victoria, British Columbia, besides the carloads from Medford, Oregon, and Wenatchee, Washington. Plate exhibits are shown in the center of the aisle running the full length of the building. The building was 350 feet long.



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

FIFTH PRIZE DISTRICT DISPLAY, WON BY J. E. LACEY, SALMON ARM, B. C.  
CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

GOLDENDALE, WASHINGTON, DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW  
SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

"I am asked to give on behalf of this Province to our friends from abroad a most hearty welcome, and most readily do I undertake that task. I think that in this Province we are regarded as a hospitable people, and I think that the strangers who have come among us will leave with the impression that they have been in the house of friends."

The Premier continued that nothing had been done in the Province which showed what British Columbia was capable of more than the development of fruit-growing. Only a few years ago people in the East had the impression that British Columbia was nothing more than a huge mountainous section. It was not then considered as a place where fruit could be successfully grown from a commercial standpoint, but nothing was so typical of its potentialities as the development of fruit-growing. Ten years ago unknown as a fruit-growing country; today in competition with all parts of the British Empire carrying off the highest awards. (Applause.) That was enough to show what British Columbia might do in any line of commercial development, when there were the means and the men behind it. Just as they had done in fruit-growing they would do in other lines.

"Before I resume my seat," said the Premier, "there is one name I must mention in this connection. It is that of your fellow-townsmen, Mr. Maxwell Smith—(hear, hear)—to whom great credit is due for the part he has taken in bringing about this exhibition. And I am sure the warmest thanks of the people of this country will be accorded to the man who has done such a noble as well as such a useful task." (Applause.)

Hon. Mr. Bowser, Acting Minister of Agriculture and Finance, said that while it was with pleasure he had come to take part in opening the show, his pleasure knew no bounds when he arrived in that building and saw the great concourse of visitors and the magnificent display of fruit. The management had brought together an apple show of which any country might be proud.

"I might state," said Hon. Mr. Bowser, "for a few moments, the great progress that has been made in fruit-growing in this Province within the past few years. A few years ago, the acreage under fruit was very small, but here in 1910 we have 120,000 acres under fruit culture. We have been successful at five Royal Horticultural Shows in London in carrying off the gold medal in competition with the whole British Empire, and these medals will be on exhibition here today. Eight years ago our fruit values were less than \$400,000, and in 1910 they are over \$2,000,000; and after the consumption of fruit in this Province we expect to ship out over a thousand carloads to the Northwest and other provinces. We have shipped already one carload consigned to the British Isles for exhibition only, and after this show we expect to send another carload for exhibition there. I understand that eleven out of fourteen carloads in this exhibition are from British Columbia.

"We are therefore proud of this, and more than proud that the citizens of Vancouver have given their time and money to bring about an exhibition of this kind, which perhaps the government of the day should have done. And I am more than proud, both as a citizen of Vancouver and a minister of the crown to see this show such a success, and as head of the department of agriculture I am proud indeed to offer my congratulations to the management for the good work they have done." (Applause.)

Mr Ellis then called on Mr Maxwell Smith as the man whose work had made such a show possible in Vancouver that day.

Manager Maxwell Smith, who was received with applause, said:

"Some people have to go to the next world before receiving the reward of their labor, but I am sure that the promoters of the First Canadian National Apple Show have their reward in this beautiful array of exhibits and this splendid gathering of those who have come to show their appreciation and interest.

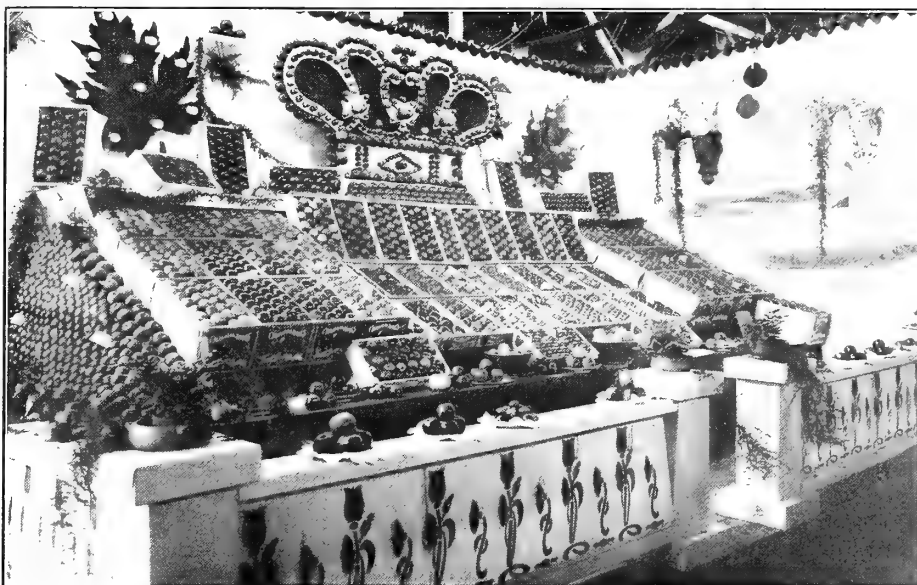
"At first we found many who doubted our ability to carry through the enterprise with any degree of credit to the country, but some of us have faith enough to believe that anything that anybody else can do that is worth doing Canada has a right to undertake. (Applause.) While acknowledging the superiority of no other people on earth, we are always glad to welcome to a friendly contest all who approach us on the basis of a dignified equality, and today we give you the most beautiful and the best Apple Show ever held. (Hear, hear.)

"In this show we have 3,424 exhibits and 194 varieties, not including those of the Dominion Government and Australia, or the window displays of the city, which have never been equalled, and the exhibitors number 287. We have 12 solid carload exhibits, comprising 7,200 boxes, 79 10-box displays, comprising 790 boxes, 74 5-box displays, comprising 370 boxes 734 single-box exhibits and 16 three-box exhibits, comprising 48 boxes, or a grand total of 9,132 boxes, 1,944 plate exhibits, and 407 boxes in pack displays, 6 collections of big apples, 13 entries in the biggest apple contest, 8 freak apples, 6 crab apple displays, 8 district exhibits, 5 limited displays, 119 entries in the apple by-products and 2 photographic displays of orchard scenes, making a grand total of about 20 carloads of exhibits.

"These exhibits are gathered from every apple-growing district in Canada, the neighboring States of Oregon and Washington, and from Tasmania. So that our show is not only national in the truest sense of the term, but international in its character. Time will not permit me to refer in detail to the excellencies of the various districts from which the exhibits are assembled; but I should like to express our appreciation of the Australian exhibit and the educational value of the Dominion Government's display, which is in charge of Mr. J. A. Ruddick.



Engraved by Hicks-Chatten Co., Portland, Oregon  
DISTRICT DISPLAY FROM NANAIMO, B. C. FIRST CANADIAN NATIONAL APPLE SHOW  
VANCOUVER, B. C., 1910

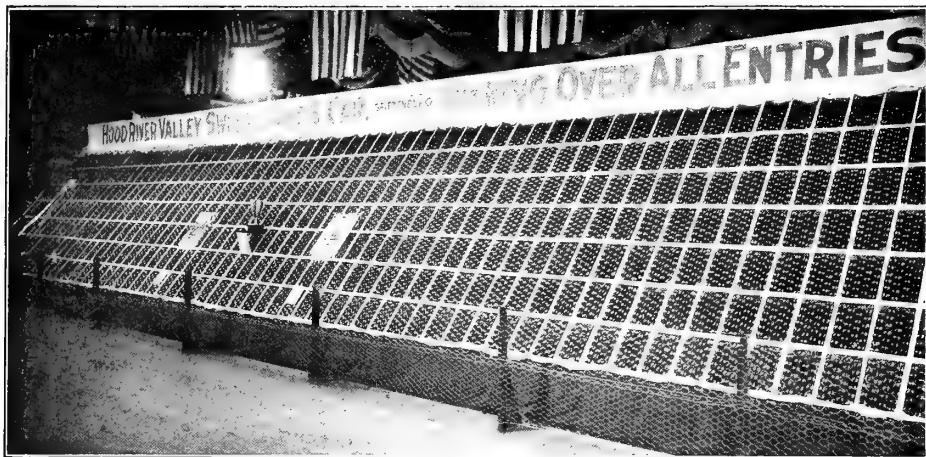


Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
THIRD PRIZE DISTRICT DISPLAY, WON BY VERNON, B. C., BOARD OF TRADE  
FIRST CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910



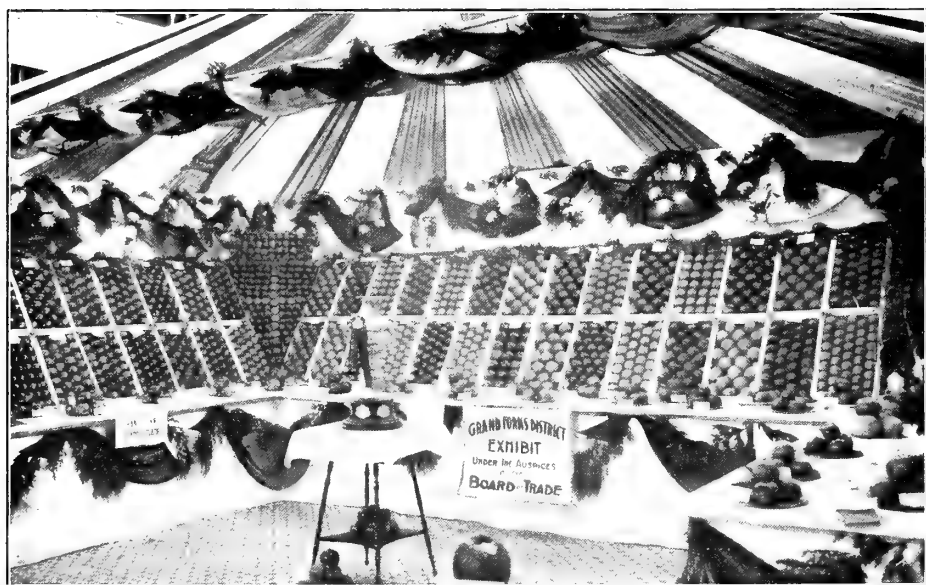
Engraved by Hicks-Chatten Co., Portland, Oregon  
DISTRICT DISPLAY FROM WEST KOOTENAY, B. C. FIRST CANADIAN NATIONAL APPLE  
SHOW, VANCOUVER, B. C., 1910





Engraved by Hicks-Chatten Co., Portland, Oregon

**SPROAT CAR OF HOOD RIVER SPITZENBERGS, NATIONAL APPLE SHOW, CHICAGO**  
 Winner of the sweepstakes solid silver cup, value \$500, given by the Chicago Association of Commerce, consisting of sixty-two affiliated associations. This car was exhibited at the Spokane National Apple Show, winning the sweepstakes prize of a check for \$1,000 for the best car of apples exhibited, and also winning the first prize of \$250 for the best car of Spitzenbergs.



Engraved by Hicks-Chatten Co., Portland, Oregon

**SECOND PRIZE DISTRICT DISPLAY, WON BY GRAND FORKS, B. C., BOARD OF TRADE**  
**FIRST CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910**



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

**MEDFORD, ROGUE RIVER VALLEY, OREGON, DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910**

"Our thanks are especially due, not only to the press of Vancouver and British Columbia in general, who have rendered yeoman service, but to the newspapers and magazines of the whole Dominion, and many of those in the United States, Australia and Great Britain. For substantial financial assistance we are deeply indebted to the Canadian Pacific Railway, the Great Northern Railway, the B. C. Electric Railway, his worship the Mayor and city council of Vancouver, and the citizens of Vancouver, who by private subscription have contributed most of the money necessary to the successful carrying out of this enterprise.

"And we are glad to note that the Dominion Government, while giving us an example of the time-honored tradition that large bodies move slowly, have not failed to climb into the chariot of progress as it rolls swiftly by on the heels of the prancing steeds of nature and science. (Laughter and applause.) In the scientific utilization of mother earth and God's quickening sunlight we have in this splendid show of the King of Fruits a triumphant exemplification of the innate dignity of honest labor. Right here I have a pleasant duty to perform.

"Some time ago I received from the Natural Resources Security Company, Limited, of this city, a cheque for \$500 with instructions to devote the amount to any department I saw fit, on condition that I did not make the announcement until today. I take pleasure in asking the judges to award this \$500 prize to the best district display. (Applause.)

"As the successful cultivation of the apple is the supreme test of soil and climate, let me say to those seeking a country in which conditions are all that go to make human life pleasant and profitable, seek ye first the kingdom of the apple, and other things needful in the sphere of agriculture will be added unto you. (Laughter.) On behalf of the board of management of the greatest Apple Show, held in the greatest city, in the greatest province, in the greatest Dominion, in the greatest Empire that the world has ever seen—(applause)—I bid you welcome from south of the international border, from across the rolling Atlantic and the broad Pacific, to this fair young nation whose star of future power, wealth and influence is in the ascendant, and is shining forth in the northern sky with ever-increasing luster and brilliancy. Our every hill and valley is pregnant with a wealth of natural resources, and on this coast, in summer, the earth laughs with fatness, and in winter the very heavens weep for joy. (Loud laughter and applause.)

"I hope you will take full advantage of our hospitality so warmly proffered by his worship the Mayor, thrice welcome to the city of the 'Lions' Gateway,' Vancouver, Chaste Queen of the Golden West, who holds in her right hand a harbor in which all the navies of the British Empire might ride in safety, but which is happily better employed in accommodating a goodly share of the commerce of the world. In her left she holds the business end of the mighty Fraser

River with the greatest salmon fisheries of the world, whose feet are kissed by the ebb and flow of the peaceful waters of the Pacific, and whose smile reflects the glory and splendor of the western sun as he modestly retires behind the rugged profile of Vancouver Island, and whose environs present a panorama of beauty and grandeur which defines the matchless skill and cunning hand of the world's greatest artist to reproduce in miniature." (Applause.)

Mr. Ellis said that he had intended to make a speech, but after Mr. Maxwell Smith and the other speakers, he (the chairman) thought he had better say nothing, and with a few remarks he called on his honor Lieutenant-Governor Paterson to open the show.

His honor the Lieutenant-Governor said that he felt that any words of commendation from him would be a mere attempt to paint the lily. The exhibition spoke for itself much louder than he could speak for it, nor was it needful for him to speak in commendation of the board of management: their work was spread out before them and spoke for itself. It had already been demonstrated that in British Columbia as a fruit-growing country they had the climate, the soil and the markets, and it only remained for the people to show intending fruit-growers that they could get a reasonable interest on their investment and good returns for their labor, and they would come in. Such an exhibition as this showed what could be done, and must be followed by good results. By virtue of his office as lieutenant-governor of the Province it was a great pleasure to him to declare open the First Canadian National Apple Show.

At this point the band of the 48th Highlanders struck up "God Save the King" and "the Maple Leaf," amidst tremendous enthusiasm, the bugles of the 6th Regiment D. C. O. R. sounded, and the greatest Apple Show in the world's history was a reality.

The great show was brought to an end on Saturday evening, November 5th, with the final concert of the famous 48th Highlanders Band, which closed with "Auld Lang Syne" and "God Save the King."

Precisely at 11 o'clock Manager Maxwell Smith mounted the platform, and in a few brief words thanking the exhibitors, visitors, the band, and all who had contributed to the success of the undertaking, officially declared the First Canadian National Apple Show closed, which was followed by three ringing cheers and a tiger from the people in the surrounding galleries.

The Pomological Convention, called at the request of many prominent fruit-growers in the United States and Canada, and under the auspices of the First Canadian National Apple Show, met in the Pender Hall, 804 Pender street, Vancouver, at 10 a. m. on Wednesday, November 2nd, there being present upwards of one hundred delegates from many points in the fruit-growing districts of the American continent.

Mr. Maxwell Smith, on motion, duly seconded, was elected chairman of the

convention, and briefly recited the object of the meeting to consider and recommend that certain amendments be made to the rules, governing standards of values of certain varieties of apples, of the American Pomological Society.

The chairman gave it as his opinion that it was unfair to establish standards of values of different varieties of apples when compared with each other as grown in any one province or state, and that the highest degree of perfection obtainable in any part of the continent should be the basis of value placed on each particular variety. That is to say, the standard of the Gravenstein should be based on its quality as produced in such districts as the Annapolis valley in Nova Scotia or the Kootenays in British

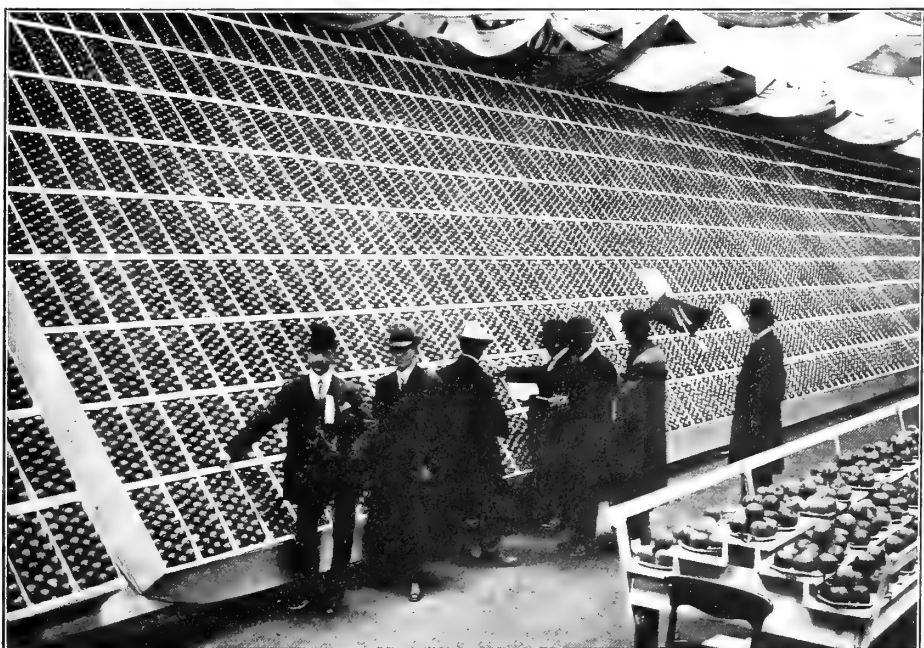
Columbia; the Fameuse and McIntosh as produced in the neighborhood of Montreal, Quebec; the Baldwin and Northern Spy as produced in the best districts of Ontario, Michigan and New York; and the Jonathan, the Spitzenberg, the Yellow Newtown, the Winesap, the Grimes' Golden, etc., as produced in the best irrigated districts of British Columbia, Washington and Oregon. If this were done fruit-growers would be encouraged to specialize in those varieties of high commercial value which could be produced to the highest degree of perfection in their respective districts.

Many prominent fruit-growers took part in the very practical discussion which followed, including Professor H. E. Van Deman, of Washington, D. C.,



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

FOURTH PRIZE DISTRICT DISPLAY, WON BY W. H. ARMSTRONG, KEREMEOS, B. C.  
CANADIAN NATIONAL APPLE SHOW, VANCOUVER, B. C., 1910



Engraved by Hicks-Chatten Co., Portland, Oregon

SWEEPSTAKES CARLOAD OF JONATHAN APPLES FROM KELOWNA, B. C.  
One hundred and twenty to the special box, diagonal pack. One of the most magnificent carloads in color, pack and uniformity ever put on exhibit. First Canadian National Apple Show, Vancouver, 1910.

Professor F. C. Sears, of Amherst Mass., Professor G. E. Rowe, of Michigan, and Professor Wilbur K. Newell, of Oregon. After a very interesting discussion, Messrs. G. E. Rowe, of Michigan, Martin Burrell, of British Columbia, and W. K. Newell, of Oregon, were appointed a committee to draft a resolution in accordance with the ex-

pressed opinions of the convention. The following is the committee's report.

"In the opinion of your committee there are many changes that should be made in the rating of varieties given by the American Pomological Society, and we recommend that the next meeting of the American Pomological Society appoint a new committee to revise the rat-

ing, making a double rating, basing it upon quality and commercial value as found in the localities or districts where the varieties are grown to the highest state of perfection. We also recommend that each apple-growing district on the continent that has a local society be requested to make recommendations regarding ratings of apples grown to perfection in their respective districts to the American Pomological Society at its next meeting, in order that the new committee that will undoubtedly be appointed may have proper data at hand to assist them in their very important work.

"Your committee also recommend that amongst other changes should be the following: That McIntosh Red be raised to 8-9, Winesap to 9, Northern Spy to 10, and Baldwin to 6-7. (Signed) G. E. Rowe, Martin Burrell, W. K. Newell."

Competition in the different classes was very keen. The great interest manifested by the growers fully compensates the promoters of this first show, and assumes the success of future undertakings. A partial list of the prize winners follows:

Class 1, Carload. Northern Spy—Coldstream Estate Co., Limited, Vernon, B. C., \$500. Spitzenberg—Sawyer Land Company, Sunnyside, Wash., \$500. Yellow Newton—Medford Commercial Club, Medford, Ore. (grown by E. Renshaw), \$500; C. Starcher, North Yakima, Wash., \$250. Grimes Golden—Sawyer Land Company, Sunnyside, Wash., \$500. King of Tompkins—Victoria Fruit-growers' Exchange, \$500. Mixed—Summerland, B. C., Agricultural Society, \$500; Vernon, B. C., Board of Trade, \$250; Mike Horan, Wenatchee, Wash., \$100. Jonathan—Kelowna, B. C., Board of Trade, \$500. Sweepstakes—Kelowna, B. C., Board of Trade, \$1,000 and \$100 solid gold medal; Summerland, B. C., Agricultural Society, 5 acres of fruit land, valued at \$750, by A. J. Smythe, Peachcliff, Okanagan Falls, B. C., and \$50 solid silver gold-embossed medal; Medford, Ore., Commercial Club, \$25 solid silver medal.

Class 2, District Display. Kelowna, B. C., Board of Trade, \$500 cash and \$100 solid gold medal; Grand Forks, B. C., Board of Trade, \$250 cash and solid silver gold-embossed medal; Vernon, B. C., Board of Trade, \$100 cash and \$25 solid silver medal; W. H. Armstrong, Keremeos, B. C., \$50 cash and \$10 bronze medal; J. E. Lacey, Salmon Arm, B. C., \$25 cash and diploma.

Class 3, Ten-Box. Northern Spy—F. R. E. De Hart, Kelowna, B. C., \$100; Coldstream Estate Co., Limited, Vernon, B. C., \$50; R. H. Fortune, Salmon Arm, B. C., \$25. Gravenstein—Doyle & MacDonald, Willow Point, B. C., \$100; Van Sant & Whipple, Olga, Wash., \$50; R. Owen, Mt. Lehman, B. C., \$25. Fameuse—Quebec Pomological Society, \$100. Spitzenberg—C. L. Green, Wenatchee, Wash., \$100; C. J. Thomson, Summerland, B. C., \$50; F. R. E. De Hart, Kelowna, B. C., \$25. Yellow Newton—C. L. Green, Wenatchee, Wash., 250 Yellow Newtons 1-year grafts, 4 feet and up, from Washington Nurseries Co., Toppenish, Wash., valued \$62.50, and \$50 cash; F. R. E. De Hart, Kelowna, B. C., \$50; C. Starcher, North Yakima, Wash., \$25. Grimes Golden—F. R. E. De Hart, Kelowna, B. C., \$100; Robt. Lawson, Grand Forks, B. C., \$50; Mrs. John Smith, Spence's Bridge, B. C., \$25. King of Tompkins—Thos. G. Earle, Lytton, B. C., \$100; R. H. Fortune, Salmon Arm, B. C., \$50; Jas. Spiers, West Kootenay, \$25. McIntosh—F. R. E. De Hart, Kelowna, B. C., \$100; C. L. Green, Wenatchee, Wash., \$50; Coldstream Estate Company, Vernon, B. C., \$25. Jonathan—John Conlin, Kelowna, B. C., \$50. Royal Anne, 25 Bing and 25 Lambert cherry trees, and 50 Moor Park apricot trees from Quaker Nurseries, Salem, Ore., valued at \$60, and \$50 cash; T. J. Black, Wenatchee, Wash., \$50; F. R. E. De Hart, Kelowna, B. C., \$25. Cox's Orange Pippin—F. R. E. De Hart, Kelowna, B. C., \$100; West Kootenay, \$50. Winesap—Tedford Bros., Wenatchee, Wash., \$100; H. L. Tedford, Wenatchee, Wash., \$50; Yakima County (Wash.) Horticultural Union, \$25.

Class 4, Five-Box. Delicious—T. J. Black, Wenatchee, Wash., \$50; H. L. Tedford, Wenatchee, Wash., \$25. Blenheim—J. T. Bealby, Nelson, B. C., \$50. Wagener—Yakima County Horticultural Union, North Yakima, Wash., 100 Royal Anne cherry trees (Carlton Nursery Co., Carlton, Ore.), value \$35, and \$25 cash; O. P. Appleton, West Kootenay, \$25; O. P. Appleton, West Kootenay, \$10. Rome Beauty—C. L. Green, Wenatchee, Wash., 250 Rome Beauty trees (Milton Nursery Co., Milton, Ore.), value \$62.50. Wealthy—R. H. Fortune, Salmon Arm, B. C., 200 Jonathan apple trees (Vineland Nurseries

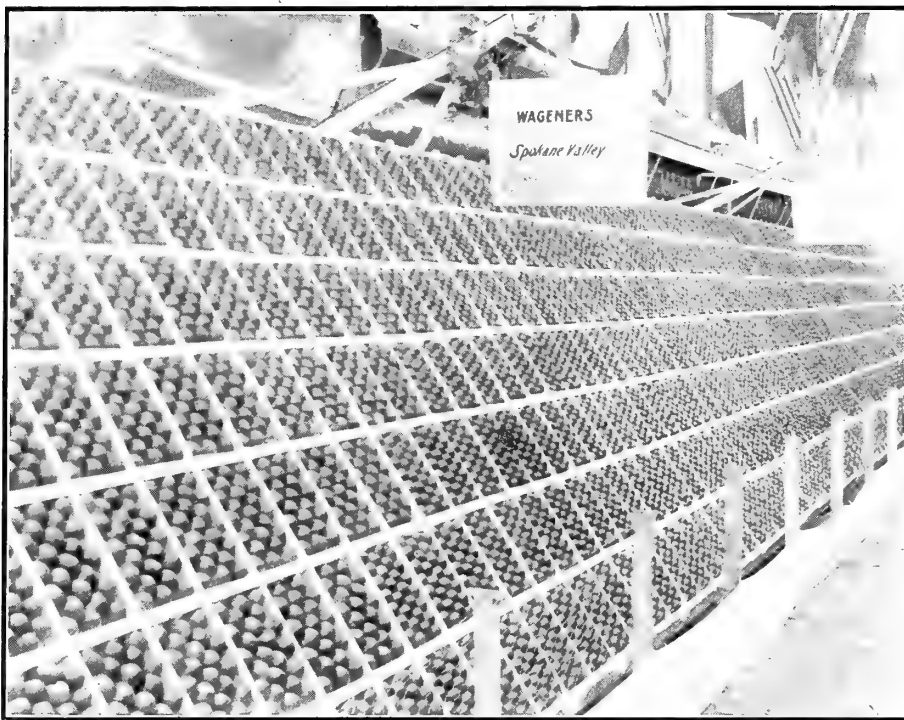


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

FIRST PRIZE CARLOAD OF WAGENERS, GROWN IN SPOKANE VALLEY, WASHINGTON. BY JOSEPH GRANT. NATIONAL APPLE SHOW, SPOKANE AND CHICAGO, 1910

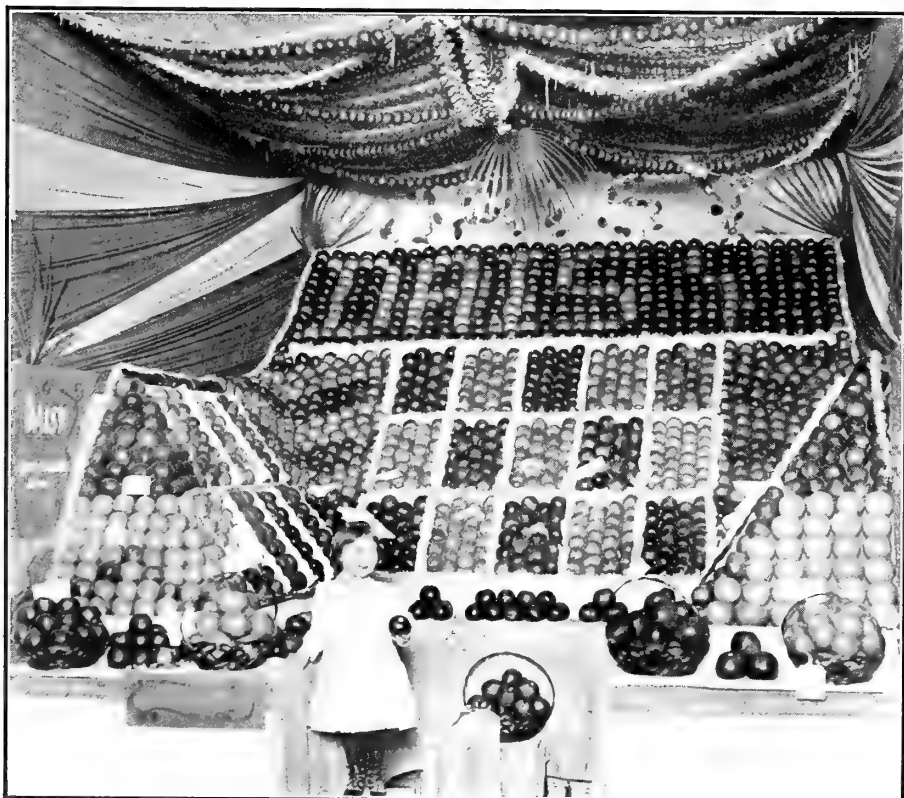


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

DAISY, WASHINGTON, DISTRICT DISPLAY AT THE THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910



Co., Clarkston, Wash.), value \$50, and \$12.50 cash; F. D. Nicholson, Salmon Arm, B. C., \$25; Coldstream Estate Co., Vernon, B. C., \$10. Black Ben—Wm. Tedford, Wenatchee, Wash., \$50. Arkansas Black—Tedford Bros., Wenatchee, Wash., \$50; C. L. Green, Wenatchee, Wash., \$25; Yakima County Horticultural Union, North Yakima, Wash., \$10. Rhode Island Greenings—C. L. Green, Wenatchee, Wash., \$50; W. Green, Wenatchee, Wash., \$25; Jas. Rooke, Grand Forks, B. C., \$10. Ontario—Robert Lawson, Grand Forks, B. C., \$50. Banana—Wm. Tedford, Wenatchee, Wash., \$50; R. H. Fortune, Salmon Arm, B. C., \$25; F. R. E. De Hart, Kelowna, B. C., \$10. White Winter Pearmain—Wm. Tedford, Wenatchee, Wash., \$50; John Scott, Wenatchee, Wash., \$25; F. R. E. De Hart, Kelowna, B. C., \$10. Stayman—T. J. Black, Wenatchee, Wash., \$25; Baldwin—Robt. Lawson, Grand Forks, B. C., 75 pear trees, standard varieties (Capital City Nursery Co., Salem, Ore.), value \$45, and \$20 cash; Mrs. Jas. Rooke, Grand Forks, B. C., \$25; F. R. E. De Hart, Kelowna, B. C., \$10. Yellow Bellflower—J. D. Housberger, Grand Forks, B. C., 50 Franquette walnut trees (Capital City Nursery Co., Salem, Ore.), value \$75; J. T. Bealby, Nelson, B. C., \$25; W. H. Armstrong, Keremeos, B. C., \$10. Mammoth Black Twig—C. L. Green, Wenatchee, Wash., 75 plum trees, standard varieties (Capital City Nursery Co., Salem, Ore.), value \$45, and \$20 cash; Robt. Lawson, Grand Forks, B. C., \$25; F. R. E. De Hart, Kelowna, B. C., \$10. King David—Tedford Bros., Wenatchee, Wash., choice of any nursery stock to value \$50 (Albany Nurseries, Albany, Ore.), and \$15 cash. Red Gravenstein—Van Sant & Whipple, Olga, Wash., \$50. Hubbardston's Nunsuch—F. R. E. De Hart, Kelowna, B. C., \$50; Miss K. Conlin, Kelowna, B. C., \$25.

Class 5, Single-Box. Mammoth Black Twig—Tedford Bros., Wenatchee, Wash., \$25; C. L. Green, Wenatchee, Wash., \$15; Wm. Green, Wenatchee, Wash., \$5. King David—T. J. Black, Wenatchee, Wash., \$25; C. L. Green, Wenatchee, Wash., \$15; Tedford Bros., Wenatchee, Wash., \$5. Snow—Jas. Rooke, Grand Forks, B. C., \$25; F. R. E. De Hart, Kelowna, B. C., \$15; James Johnstone, Nelson, B. C., \$5. Yellow Newtown—Tedford Bros., Wenatchee, Wash., 100 Yellow Newtown trees (Oregon Nursery Co., Orenco, Ore.), value \$25, and \$10 cash; C. L. Green, Wenatchee, Wash., \$15; F. R. E. De Hart, Kelowna, B. C., \$5. Black Ben or Gano—Tedford Bros., Wenatchee, Wash., \$25; C. L. Green, Wenatchee, Wash., \$15; R. H. Fortune, Salmon Arm, B. C., \$5. Blenheim—J. T. Bealby, Nelson, B. C., \$25; Victoria, B. C., Fruit-growers' Exchange, \$15; G. & F. Scott, Ganges Harbor, Salt Spring Island, B. C., \$5. McIntosh—Will R. Bartlett, Summerland, B. C., 100 McIntosh Red trees (Oregon Nursery Co., Orenco, Ore.), value \$25, and \$10 cash; C. L. Green, Wenatchee, Wash., \$15; Alex. Stewart, Summerland, B. C., \$5. Wagener—O. B. Appleton, West Kootenay, \$25; C. L. Green, Wenatchee, Wash., \$15; Jas. Rooke, Grand Forks, B. C., \$5. Ortleby—Tedford Bros., Wenatchee, Wash., \$25; T. J. Black, Wenatchee, Wash., \$15; C. L. Green, Wenatchee, Wash., \$5. Lady—Tedford Bros., Wenatchee, Wash., \$25; Tedford Bros., Wenatchee, Wash., \$15; F. R. E. De Hart, Kelowna, B. C., \$5. Arkansas Black—T. J. Black, Wenatchee, Wash., \$25; Tedford Bros., Wenatchee, Wash., \$15; C. L. Green, Wenatchee, Wash., \$5. Delicious—C. L. Green, Wenatchee, Wash., \$25; Tedford Bros., Wenatchee, Wash., \$15; F. R. E. De Hart, Kelowna, B. C., \$5. Ribston Pippin—C. L. Green, Wenatchee, Wash., \$25; Wm. Green, Wenatchee, Wash., \$15. Stayman—C. L. Green, Wenatchee, Wash., 100 McIntosh Red apple trees (Crescent Nursery Co., Council Bluffs, Iowa), value \$25, and \$10 cash; T. J. Black, Wenatchee, Wash., \$15; L. A. Taylor, Wenatchee, Wash., \$5. Jonathan—Tedford Bros., Wenatchee, Wash., 100 Jonathan apple trees (Layritz Nursery Co., Victoria, B. C.), value \$25, and \$10 cash; John Conlin, Kelowna, B. C., \$15; C. L. Green, Wenatchee, Wash., \$5. Alexander—J. T. Bealby, Nelson, B. C., \$25; Jas. Johnstone, Nelson, B. C., \$15. Mann—Tedford Bros., Wenatchee, Wash., \$25; T. J. Black, Wenatchee, Wash., \$15; Miss K. Conlin, Kelowna, B. C., \$5. Ribston—Alex. Stewart, Summerland, B. C., \$25; F. R. E. De Hart, Kelowna, B. C., \$15; R. H. Fortune, Salmon Arm, B. C., \$5. Ontario—Doyle & MacDonald, Willow Point, B. C., \$25; J. T. Bealby, Nelson, B. C., \$15; W. Rutherford, Nelson, B. C., \$5. Wealthy—Muir Stewart, Summerland, B. C., 100 E. Spitzenberg apple trees (Fraser Valley Nursery Co., Ltd., Aldergrove, B. C.), value \$25, and \$10 cash; C. L. Green, Wenatchee, Wash., \$15; W. E. Meek, Salmon Arm, B. C., \$5. Canada Red—H. H. Armstrong, Keremeos, B. C., \$25; Doyle & MacDonald, Willow Point, B. C., \$15; W. H. Armstrong, Keremeos, B. C., \$5. Ben Davis—Tedford Bros., Wenatchee, Wash., \$25; T. J. Black, Wenatchee, Wash., \$15; C. L. Green, Wenatchee, Wash., \$5. White Winter Pearmain—C. L. Green, Wenatchee, Wash., \$25; Wm. Green, Wenatchee, Wash., \$15; Yakima County Horticultural Union, \$5. Winter Banana—Tedford Bros., Wenatchee, Wash., 100 Wealthy apple trees (Fraser Valley Nurseries, Ltd., Aldergrove, B. C.), value \$25, and \$10 cash; R. H. Fortune, Salmon Arm, B. C., \$15;

Chas. J. Thomson, Summerland, B. C., \$5. Hubbardston's Nunsuch—F. R. E. De Hart, Kelowna, B. C., \$25; Miss K. Conlin, Kelowna, B. C., \$15. Yellow Bellflower—Doyle & MacDonald, Willow Point, B. C., \$25; C. L. Green, Wenatchee, Wash., \$15; Tedford Bros., Wenatchee, Wash., \$5. Blue Pearmain—J. D. Housberger, Grand Forks, B. C., 100 peach trees, standard variety (Capital City Nursery Co., Salem, Ore.), value \$35; M. H. Wilkinson, Hagans, South Saanich, B. C., \$15; Harry Allberry, Hagans, South Saanich, B. C., \$5. Hoover—T. J. Black, Wenatchee, Wash., \$25; Tedford Bros., Wenatchee, Wash., \$15; C. L. Green, Wenatchee, Wash., \$5. Northern Spy—F. R. E. De Hart, Kelowna, B. C., 100 Rome

Beauty apple trees (Fraser Valley Nurseries, Ltd., Aldergrove, B. C.), value \$25, and \$10 cash; J. D. Honsberger, Grand Forks, B. C., \$15; Jas. Gartrell, Summerland, B. C., \$5. Maiden Blush—C. L. Green, Wenatchee, Wash., \$25. Rome Beauty—C. L. Green, Wenatchee, Wash., 50 Montmorency cherry trees (F. W. Meneray, Crescent Nursery Co., Council Bluffs, Iowa), value \$17.50, and and \$17.50 cash; Tedford Bros., Wenatchee, Wash., \$15; T. J. Black, Wenatchee, Wash., \$5. Cox's Orange Pippin—Alex. Stewart, Summerland, B. C., 100 Cox's Orange Pippin trees (Layritz Nursery Co., Victoria, B. C.), value \$35; F. R. E. De Hart, Kelowna, B. C., \$15; F. R. E. De Hart, Kelowna, B. C., \$5.

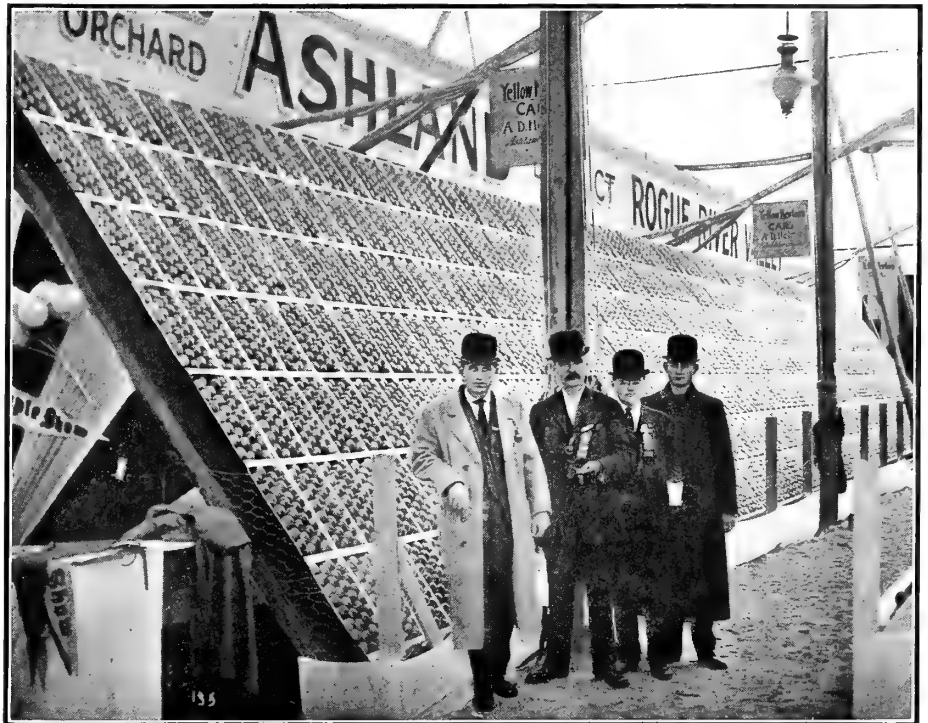


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

CARLOADS OF NEWTOWNS, GROWN BY A. D. HELLMAM, ASHLAND, OREGON, PACKED BY W. E. PIERSON, ASHLAND, OREGON, WINNING SECOND PRIZE ON CARLOAD OF YELLOW NEWTOWNS, AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, AND CHICAGO, ILLINOIS, NOVEMBER 28-DECEMBER 4, 1910

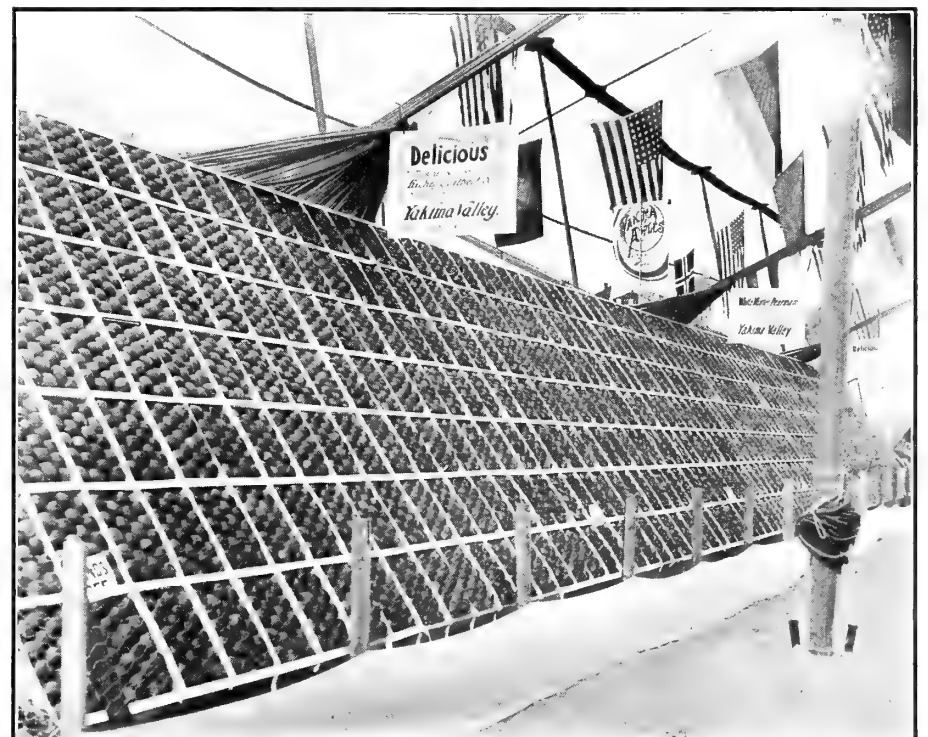


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

FIRST PRIZE MIXED CARLOAD, EXHIBITED BY RICHEY & GILBERT, NORTH YAKIMA, WASHINGTON, THIRD NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, AND CHICAGO, ILLINOIS, NOVEMBER 28-DECEMBER 4, 1910

King of Tompkins—C. L. Green, Wenatchee, Wash., 100 King of Tompkins trees (Layritz Nursery Co., Victoria, B. C.), value \$25, and \$10 cash; R. H. Fortune, Salmon Arm, B. C., \$15; R. H. Fortune, Salmon Arm, B. C., \$5. Spitzenberg—Tedford Bros., Wenatchee, Wash., 100 Esopus Spitzenberg trees (Oregon Nursery Co., Orenco, Ore.), value \$25, and \$10 cash; C. L. Green, Wenatchee, Wash., \$15; Yakima County Horticultural Union, \$5. Gravenstein—J. T. Bealby, Nelson, B. C., \$25; Victoria, B. C., Fruit-growers' Exchange, \$15; J. A. Coatham, Sardis, B. C., \$5. Grimes Golden—Tedford Bros., Wenatchee, Wash., 100 Winter Banana apple trees (Fraser Valley Nursery, Ltd., Aldergrove,

B. C.), value \$25, and \$10 cash; F. R. E. De Hart, Kelowna, B. C., \$15; J. T. Bealby, Nelson, B. C., \$5. Winesap—T. J. Black, Wenatchee, Wash., \$25; Tedford Bros., Wenatchee, Wash., \$15; Yakima County Horticultural Union, \$5. Rhode Island Greening—C. L. Green, Wenatchee, Wash., \$25; Jas. Gaskell, Summerland, B. C., \$15; R. H. Fortune, Salmon Arm, B. C., \$5. Baldwin—Tedford Bros., Wenatchee, Wash., 50 Royal Anne cherry trees (Lafayette Nursery Co., Lafayette, Ore.), value \$17.50, and cash \$17.50; C. L. Green, Wenatchee, Wash., \$15; F. R. E. De Hart, Kelowna, B. C., \$5. McMahon White—Doyle & MacDonald, Willow Point, B. C., \$25. Rambo (Extra)—H. Ingalls, Kere-

meos, B. C., diploma. Golden Russett (N. Y.)—H. S. Fanquier, West Kootenay, diploma. Stark—C. M. Tripp, West Kootenay, diploma. Fallawater—H. Ingalls, Kere-meos, B. C., diploma. Limited Display—R. H. Fortune, Salmon Arm, \$250; Kelowna Board of Trade, \$125; West Kootenay Fruit Exchange, \$50; W. H. Armstrong, Kere-meos, B. C., \$25.

Biggest Apples—R. H. Fortune, Salmon Arm, B. C., \$150; H. W. Collins, Grand Forks, B. C., \$75; F. R. E. De Hart, Kelowna, B. C., \$50; J. T. Smith, Kamloops, B. C., \$25. Biggest Apple on Earth—Fred L. Post & Sons, Chelan, Wash., \$100 solid gold medal; C. E. Weeks, Kelowna, B. C., \$50 solid silver gold-embossed medal; C. L. Green, Wenatchee, Wash., \$25 solid silver medal; R. H. Fortune, Salmon Arm, B. C., \$10 bronze medal. Freak Apple—C. L. Green, Wenatchee, Wash., \$10 bronze medal.

Pack Awards. 3½-Tier Pack—Tedford Bros., Wenatchee, Wash., \$75; C. L. Green, Wenatchee, Wash., \$37.50; C. L. Green, Wenatchee, Wash., \$12.50; T. J. Black, Wenatchee, Wash., \$10 bronze medal. 4-Tier Pack—H. L. Tedford, Wenatchee, Wash., \$100; Mrs. John Smith, Spence's Bridge, B. C., \$50; J. W. Bennett, Mayne Island, B. C., \$25. 4½-Tier Pack—J. W. Morris & Co., Vancouver, B. C., \$100; Mrs. John Smith, Spence's Bridge, B. C., \$50. 5-Tier Pack—Tedford Bros., Wenatchee, Wash., \$75; C. L. Green, Wenatchee, Wash., \$37.50; W. W. Sawyer, Sunnyside, Wash., \$12.50; Mrs. John Smith, Spence's Bridge, B. C., \$10 bronze medal. Shipping Pack Special—J. W. Cockle, West Kootenay, \$25 solid silver medal; F. R. E. De Hart, Kelowna, B. C., diploma.

Special Sweepstakes—To the winner of the most prizes of all kinds, \$75 solid gold medal, C. L. Green, Wenatch, Wash., to the winner of the most first prizes, \$100 gold medal, C. L. Green, Wenatchee, Wash.; to the winner of the most

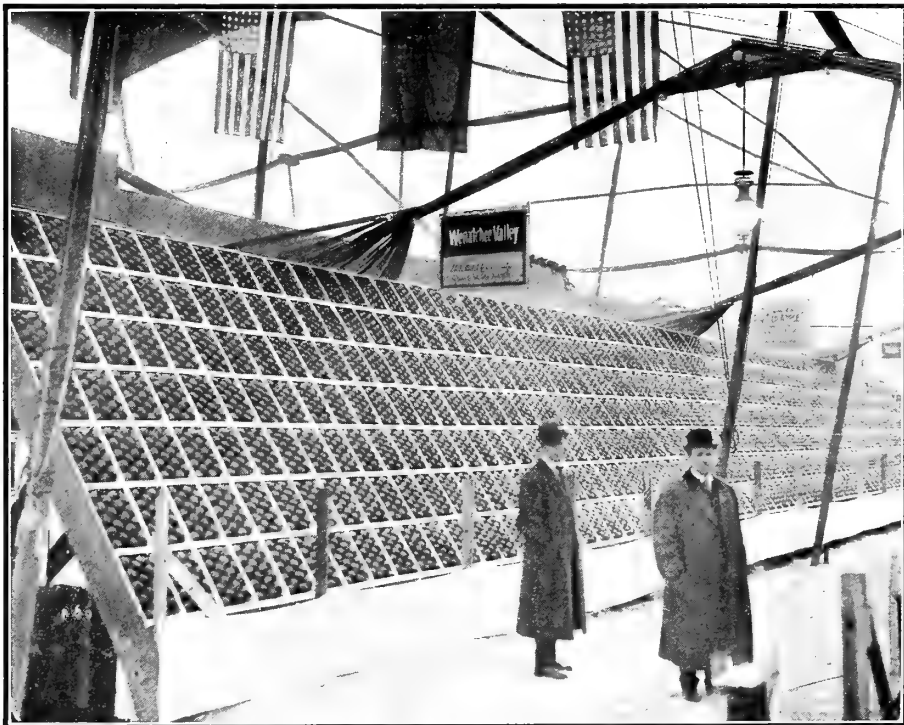


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

CARLOAD OF SPITZENBERGS EXHIBITED BY HINMAN & GRANDY, CASHMERE, WASHINGTON, WINNING SECOND SWEEPSTAKES CARLOAD PRIZE AND SECOND PRIZE ON SPITZENBERGS, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

SUNNYSIDE, WASHINGTON, DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS



H. E. VAN DEMAN

Contributing editor of "Better Fruit," chief judge at the National Apple Show, Spokane, Washington; Western Montana Apple Show, Missoula, Montana; Canadian National Apple Show, Vancouver, British Columbia; Hood River Apple Show, Hood River, Oregon, and Oregon Apple Show, Portland, Oregon. Chief fruit judge at the Alaska-Yukon-Pacific and many other great expositions.

first prizes, Single-box Display, \$25 silver medal. Tedford Bros., Wenatchee, Wash.; to the winner of the most prizes in Plate Display, \$25 silver medal, C. L. Green, Wenatchee, Wash.; to the winner of most first prizes in Plate Display, \$25 silver medal, C. L. Green, Wenatchee, Wash.; to the winner of the most first prizes in Class 3, \$75 solid gold medal, F. R. E. De Hart, Kelowna, B. C.; to the winner of most first prizes in Class 4, \$50 solid silver gold-embossed medal, C. L. Green, Wenatchee, Wash.; to the winner of most artistically arranged competitive exhibit, \$100 solid gold medal, R. H. Fortune, Salmon Arm, B. C.; to the exhibitor making most entries in all classes, \$25 solid silver medal, F. R. E. De Hart, Kelowna, B. C. Fruit Magazine Special—To the winner of most first prizes by any exhibitor in Canada, \$150 solid gold medal, F. R. E. De Hart, Kelowna, B. C. Three Best Boxes or Barrel Sweepstakes—Tedford Bros., Wenatchee, Wash. (Spitzenberg), \$75; C. L. Green, Wenatchee, Wash. (Mammoth Black Twig), \$50; J. T. Bealby, Nelson, B. C. (Golden Russett), \$25.

Crab Apples. Single Box—J. T. Bealby, Nelson, B. C., \$5. Plate Hyslop—F. R. E. De Hart, Kelowna, B. C., \$2; C. L. Green, Wenatchee, Wash., \$1. Martha—C. L. Green, Wenatchee, Wash., \$2. Transcendent—C. L. Green, Wenatchee, Wash., \$2. General Grant—J. T. Bealby, Nelson, B. C., \$2.

# MISSOULA'S WESTERN MONTANA APPLE SHOW

BY A. L. BREITENSTEIN, SECRETARY CHAMBER OF COMMERCE, MISSOULA, MONTANA

TO six men the Missoula Chamber of Commerce let the destiny of the second annual Western Montana Apple Show for the year 1910. It is only necessary to quote the utterances of several apple show experts to prove that this event held at Missoula, October 10th to 15th, was a success. Hon. H. S. Van Deman, of Washington, D. C., considered the best apple judge in the United States and who passed upon the products of this show, in an address to the business men at Missoula remarked: "This is one of the finest and best apple shows for its size that I have ever viewed. Your varieties are excellent and of splendid commercial value, and the quality has increased 300 per cent from the show of 1909." Ren H. Rice, secretary of the National Apple Show, made a special trip to see Missoula's Annual Apple Show, and when escorted into the huge tent where the apples were displayed, stopped short and said, "Amazing, astonishing, wonderful; I had no

and vaudeville stunts that not only amused but brought back spectators a second time. On one side of the tent were the box displays and on the other the plate exhibits. Down the center on each end were the different commercial club booths, showing off their fruits,

Over one hundred varieties of apples were shown, the most prominent being the McIntosh, Jonathan, Belleflower, Gano and Northern Spy. These are considered the leaders in commercial varieties in Western Montana. Of course many other varieties are really excellent



BEAUTIFUL SILVER TROPHY CUP

Given by the Portland Commercial Club for best ten boxes of apples grown in an Oregon orchard. Won by John Hackel, of Hood River, Oregon, National Apple Show, Spokane, Washington, and Chicago, Illinois.

idea western Montana's soil brought forth such surprising varieties as these."

The six men who worked so energetically, earnestly and industriously to shape this special event to auspicious dimensions, were F. M. Lockman, a wholesale grocer, who acted as president; Fred J. Erfert, an expert apple grower, was general vice president, while A. J. Breitenstein, secretary of the Missoula Chamber of Commerce, carried out the publicity ideas and served as secretary and treasurer. The other directors were F. S. Lusk, president of the First National Bank; M. L. Dean, State Fruit Inspector, and A. L. Stone, editor of the Missoulian.

The decorations of the huge tent in which the show was held this year were especially attractive; this tent, 60x130 feet, was broken in the center by a large band stand from which band concerts were given each afternoon and evening. In addition, there were other musical



Engraved by Hicks-Chatten Co., Portland, Oregon

PLATE EXHIBIT AT THE WESTERN MONTANA APPLE SHOW, 1910, MISSOULA, MONTANA

grains and vegetables. In addition there were, of course, vegetable and grain sections, allowing farmers not growing fruits to compete for some very liberal premiums.

This year an expert apple packer gave daily demonstrations on the important and best commercial packs. For the grower this was an interesting part of the show, and was intently watched by eager learners. Lectures and addresses were also given by horticultural experts and fruit growers of renown.

from all standpoints; for instance, the Rome Beauty, Northwest Greening, Aiken, Delicious, Gravenstein, King, Rhode Island Greening and Wagener. Over seven hundred entries were made in the Western Montana Apple Show this year, a large majority of the exhibitors being from the renowned and glorious Bitter Root Valley. The fertile Plains Valley was also well represented, and of course the territory adjacent to Missoula had many entries. Some of the important winners were as follows:



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

VIEW OF THE WESTERN MONTANA APPLE SHOW, FROM THE ENTRANCE, SHOWING ONE CORNER OF THE IMMENSE TENT. MISSOULA, MONTANA, 1910



Best 20 boxes commercial apples—H. A. Briggs, Victor, Mont., first prize, \$50; Valley Mercantile Co., Hamilton, Mont., second, \$30. Jonathans won this premium.

Best display of apples grown in Bitter Root Valley—Ben Kress, Hamilton, Mont., first, \$50.



Engraved by Hicks-Chatten Co., Portland, Oregon  
PRIZE CELERY GROWS THE SAME AS  
RED APPLES

Exhibited at the Western Montana Apple Show  
Missoula, Montana, 1910

Best box McIntosh apples—H. Platt & Sons, of Como, Mont., first prize.

Best commercial packed box of apples—Ben Kress, Hamilton, Mont., first with McIntosh.

Best packed box of Rome Beauty and Northern Spy—Ben Kress, first.

Best 10 boxes McIntosh apples grown in Bitter Root Valley—Ben Kress, first.

Best five boxes McIntosh apples—E. A. Johnson, of Hamilton, Mont., first prize of \$50.

Best 10 boxes commercial apples—H. A. Briggs, first, \$25; O. W. Kerr, Florence, second, \$15; C. E. Lucas, Missoula, third, \$10.

Best five boxes commercial apples—Allomont Orchards, Lo Lo, first \$12, with Aikens; W. A. Wilson, of Paradise, second, and H. A. Briggs, of Victor, third.

Best 10 plates, different varieties grown by one individual—M. H. White, of Florence, first, \$10; J. P. McCain, of Charleton, second, \$5.

Following are a few of the plate winners: The McIntosh prize was \$10, and the others secured \$5; Aiken, Allomont Orchards; Lo Lo; Ben Davis, W. A. Wilson, Paradise; Bellflower, W. H. Rock, Lo Lo; Chenango, H. A. Briggs, Victor; Duchess, H. A. Briggs, Victor; Delicious, H. Platt & Sons, Como; Geno, Mary Westby, Missoula; Grimes Golden, Mary Westby, Missoula; Jonathan, W. A. Wilson, Paradise; King, M. H. Pierce, Plains; McIntosh, Ben Kress, Hamilton; Northern Spy, Ben Kress, Hamilton; Spitzenberg, Wm. Dallas, Missoula; Snow, H. Platt & Sons, Como; Twenty Ounce, C. E. Lucas, Missoula; Wagener, Ben Kress, Hamilton.

Of course the above were merely a few of the many varieties represented; the displays of crabs, pears, peaches, plums and grapes were many and varied. Those with the blue cards attached pulled down many valuable premiums. Over \$3,500.00 was given in cash and special bonuses. There were no carload lots shown, as the directors of the fair decided to eliminate this class, due to lack of display space.

A section that caused a great deal of interesting comment was that set aside for canned goods and oven stuff. There



Engraved by Hicks-Chatten Co., Portland, Oregon  
BEST PLATE OF MCINTOSH, AT WESTERN  
MONTANA APPLE SHOW, MISSOULA,  
MONTANA, 1910

were thirty-three entries for the best apple pie shown, Mrs. Mary Cronburg, of Missoula, capturing the premium, one case of Hills Brothers steel cut coffee, valued at \$15.00.

From all standpoints, and especially from an educational point, the show was a decided success; it gave the exhibitor an opportunity to compare his product with that of his neighbor's, and if superior, ascertain how to improve his conditions or methods. To learn what the correct type is and how to develop it.

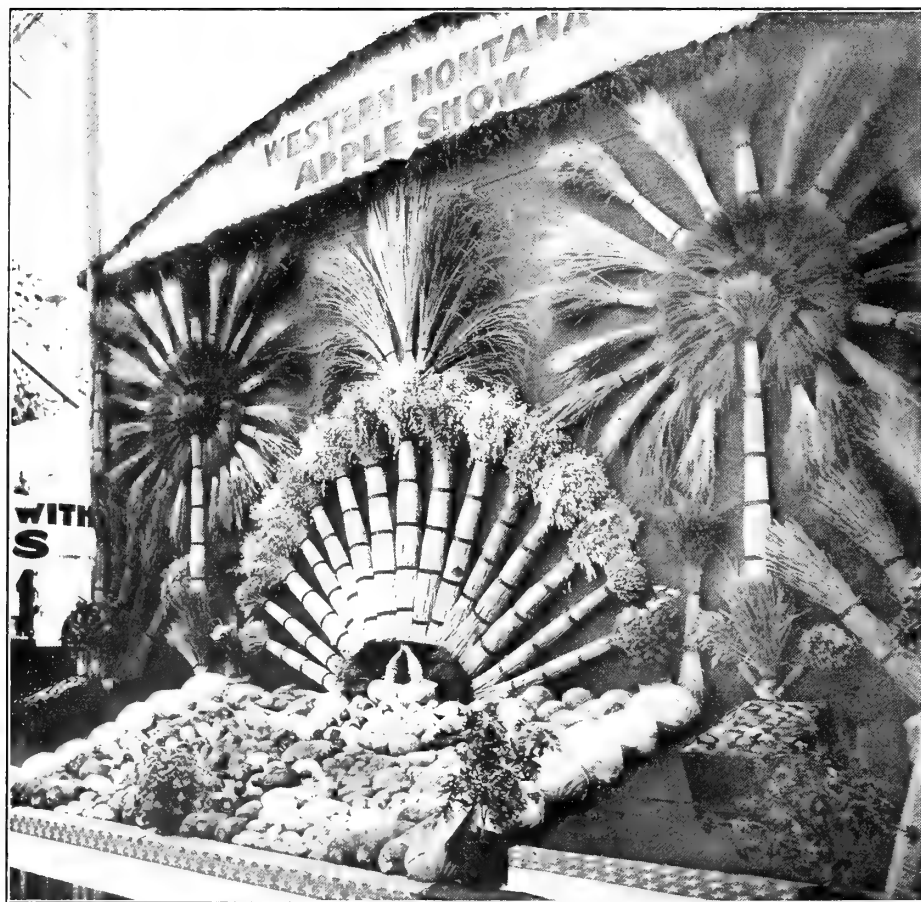
A man who makes an early determination to produce display products, studies to improve his methods and gives his crops better care, which tends to improve his entire farm, thereby increasing its value.

It shows to the community what improved methods will produce, thereby stimulating all to do better. It shows to visitors what can be produced and places the exhibitor's farm in the foreground as one of the best in the country.

From the standpoint of the state, it helps to show the world the advantages of the state and the character of the products produced, which adds to the agricultural value of the entire state.

The agricultural value of a state is measured by the quality and quantity of the products of the farm; hence this value rests in the hands of the farmer, and it behooves every soil owner to show the best that can be grown on his farm. Generally the premiums won are sufficient remuneration to pay for all extra labor and time.

The Western Montana Apple Show is fostered by the Missoula Chamber of Commerce, this organization putting up the money to bring before the world one of the resources of the third largest state in the union.



Engraved by Hicks-Chatten Co., Portland, Oregon

VIEW OF THE MISSOULA CHAMBER OF COMMERCE EXHIBIT OF GRAIN, VEGETABLES  
AND FRUIT WHICH WON THE \$250 CHICAGO, MILWAUKEE & PUGET SOUND RAILWAY  
PRIZE, WESTERN MONTANA APPLE SHOW, MISSOULA, MONTANA, 1910

# OREGON SHOW EXCELS ALL PREVIOUS DISPLAYS

FROM THE WEEKLY OREGONIAN

**T**WENTY thousand persons visited the Portland Apple Show Wednesday, Thursday, Friday and Saturday of last week in the Majestic Theater building, at Fifth and Washington. The exhibit was held under the auspices of the Oregon State Horticultural Society and far exceeded any display of a similar character in the number of exhibits and in point of attendance ever held in the state.

Hood River exhibitors won nearly every prize of importance. It took the sweepstakes prize, the leading trophy in the show, carrying a \$250 purse. The Dalles won second prize, with \$175, and the Hillsboro Board of Trade was third, gaining a \$75 bounty. When the judge, H. E. Van Deman, of Washington, D. C., passed upon the smaller contests, such as the 25-box competition and the five boxes of Spitzenbergs and Newtowns, Hood River also won, and in the three-box awards Hood River was equally successful.

The displays occupied two floors of the building, each being decorated with the green of the apple leaf and the red of the Spitzenberg. The racks crossed each floor and almost to the ceiling boxes of apples were piled, arranged to harmonize colors of the fruit. Hood River had the largest exhibit, while Mosier, The Dalles and Dufur were not lagging far behind. Washington County had a pretty exhibit, consisting of a shield in colors, with the picture of George Washington in the center. Stars, shields, bars and all of the emblems of the National flag were worked into a large and complete design.

Coos Bay, Yamhill, Salem, Albany, Benton County, Eugene, Lakeview and a dozen other counties and towns were represented on the tables, in the racks or in plates.

One of the most interesting features of the show was the apple pie contest, for which there were several hundred entries. One pie, cooked in a zinc tub, entered by H. H. Haynes, of Portland, was one of the drawing cards of the show.

Homer C. Atwell, of Forest Grove, president, and Frank W. Power of Portland, secretary-treasurer of the Horticultural Society, were re-elected and received many compliments for the manner in which they conducted the show.

Hood River won everything in sight at the Portland Apple Show in the awarding of the prizes Thursday. It was first in the sweepstakes prize, first in the 25-box contest, first in the five-box prize, first in Spitzenbergs and first in Yellow Newtowns. In fact, the only prize worth mentioning that it did not pin to its banner was the three-box Spitzenberg, which was won by the Salem Fruit Union. In point of markings the Hood River apples stood first on account of symmetry, proper size and quality, and the color was all that the presiding judge desired.

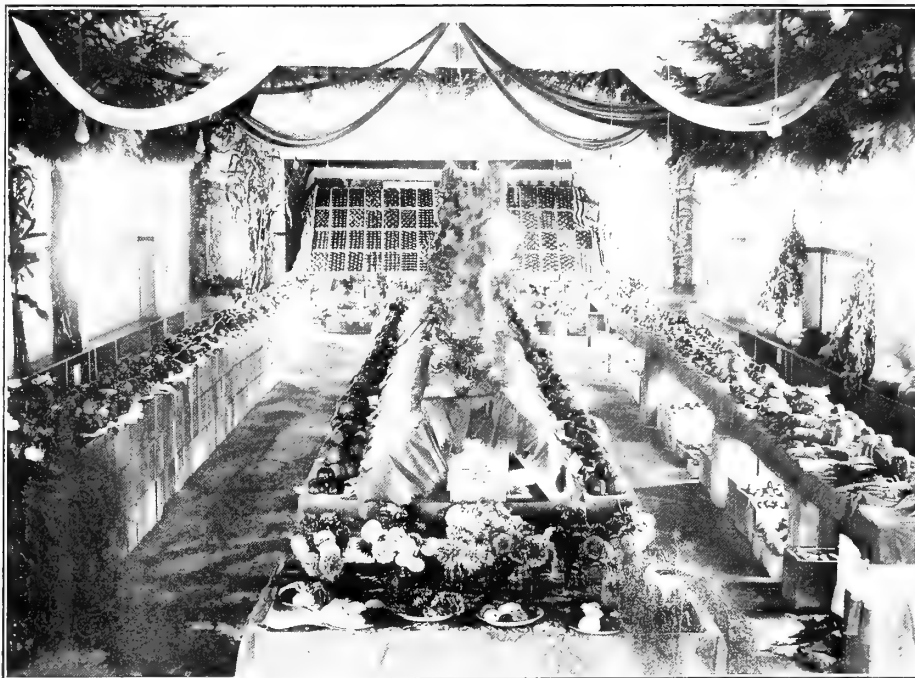
"The Hood River apple-growers," said H. E. Van Deman, the judge, "have

been in so many apple shows that they have the art down almost to perfection. They seem to know just how to pack, how to polish and how to sort for form."

Second place in the sweepstakes prize was won by The Dalles, while the Hillsboro Board of Trade was in third place. The \$250 Louis W. Hill prize for apples

grown in a section tributary to the Great Northern was won by The Dalles. In the contest for the Howard Elliott prize of the Northern Pacific, the Hillsboro Board of Trade received the \$250 donated by the railway.

When Professor Van Deman, in his round of judging, reached the Mosier exhibit and found 30 boxes of three-tier



Engraved by Hicks-Chatten Co., Portland, Oregon  
DUFUR VALLEY, OREGON, DISTRICT DISPLAY AT THE DUFUR APPLE SHOW. AT THE OREGON APPLE SHOW, PORTLAND, 1910, A MUCH HANDSOMER DISPLAY WAS MADE, OF WHICH NO VIEW WAS OBTAINED



Engraved by Hicks-Chatten Co., Portland, Oregon  
UPPER HOOD RIVER VALLEY, OREGON, DISTRICT DISPLAY AT HOOD RIVER APPLE SHOW AND OREGON APPLE SHOW, PORTLAND, OREGON, 1910

Yellow Newtowns and Spitzenbergs, 54 to the box, he shook his head and said:

"There is no use, boys. You have a good apple, a dandy but it is too large. It will not meet the requirements of standardization adopted by the American Society. With your size too large you will be cut in points so as to put you out of the competition."

This proved a great disappointment to the Mosier exhibitors, who had an exhibit of 150 boxes. The delegation from this growing apple district was composed of C. A. Monger, J. K. McGregor,

Dr. D. Robinson, A. Carpenter, John P. Ross, Fred Shogren and Ed Chase.

The apples have attracted much attention in the two days of the show. Ed Howe, who has the display in charge, said that even if the apples were too big to come within the measurements of the American Society, they found a ready sale, as the whole crop had been disposed of to big hotels and cafes of Chicago and New York. The apples are of high color and splendid shape. It is the policy of promologists, Professor Van Deman said, to keep the size of the apple down,

believing that commercially it will be better in the end.

"We are in the Hood River zone," said J. K. McGregor, "and we believe that the future will show that Mosier has the best apple ground in the world."

The exhibit committee decided to give Mosier special mention as having the largest apples of the commercial varieties.

One of the varieties of apples which is attracting attention is the Vanderpool, which for the first time is exhibited in the Portland show. It is the only genuine Oregon apple known to the orchardist, and he has known it only a few years. Professor Van Deman has refused to give it a rating for the reason that it has not been accepted by the American Pomological Society as a recognized variety. The Vanderpool has a history dating back 80 years. It was in 1870 that David Vanderpool, a pioneer of 1831, who came across the plains with an ox team, noticed a seedling growing outside of his orchard fence in Benton County. He thought nothing of it, and although it was a volunteer, permitted it to grow until it developed into a bearing tree. When the apples were ripe he noticed they were somewhat different in taste and of different size than the Spitzenberg, which it closely resembled. Other seedlings were raised from the volunteer tree.

Before long Mr. Vanderpool had several trees of the same character, all true to the original type. It then dawned upon him that he had a new variety. Even then he paid no particular attention to the tree, except to call the attention of an occasional visitor to the good qualities of the fruit. Finally, at the Albany show a few years ago, the apple was exhibited by David Pombaugh, and considerable curiosity was aroused.

It was evident that there would be a difference of opinion whether it would be recognized as a distinct variety, owing to its close resemblance in color to the Spitzenberg. Application has been made to the American Pomological Society, and action is expected at the next meeting. The Vanderpool is smaller than the Spitzenberg, although as a rule it develops to a good size. Its color is red, one side showing a lighter color, with alternating shades of light and dark red. It is a close-grained apple, possessed of a sub-acid flavor as compared with the strong acid of the Spitzenberg, and it is asserted that it keeps well.

David Vanderpool died several years ago on the home place in Benton County, near the apple tree by which he was known. Today there are hundreds of apple trees in the county, either budded or grafted from the old tree. One man has an orchard of 300.

C. I. Lewis, professor of horticulture of the Oregon Agricultural College, was present with his class in systematic commercial pomology. He took the class during the day from exhibit to exhibit to give the members a practical training in the varieties—name, size, color and shape. He gives his class daily lectures upon the care and protection of the apple



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
MAXWELTON ORCHARD DISPLAY AT HOOD RIVER APPLE SHOW AND OREGON APPLE SHOW, PORTLAND, OREGON, 1910



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
HOME ORCHARD COMPANY DISPLAY AT HOOD RIVER APPLE SHOW AND PORTLAND, OREGON, APPLE SHOW, 1910, WINNING THE SWEEPSTAKES PRIZE AT BOTH HOOD RIVER AND PORTLAND



tree. The class is composed of A. A. Ashber, J. Q. Adams, C. C. Held, H. T. Blase, T. L. Royal, L. E. Palmer, F. W. Clyne, O. H. Elmer, H. E. Walberg, J. M. Speidel and C. C. Thompson.

"Freak" apples, of which there were many on display, have attracted much attention. There is one Spitzenberg apple with a quarter Newtown skin of light green shade. The quarter could be sliced out and an expert would declare that it was from a Newtown. Another odd apple is a Yellow Newtown with two baby apples growing out of the skin. They are plain and well developed. There is a Baldwin with streaks of Arkansas Black skin and another Yellow Newtown is half a Baldwin, the color line being straight and distinct.

Following is a partial list of the awards:

Sweepstakes—First prize, G. R. and John B. Castner, of Hood River, \$250; second prize, The Dalles Business Men's League, \$175; third prize, Hillsboro Board of Trade, \$25.

Louis W. Hill prize of \$250—Won by The Dalles Business Men's League.

Howard Elliott prize of \$250—Won by Hillsboro Board of Trade.

Twenty-five-box lots—First prize, Lawrence & Smith, Hood River, \$100; second, F. C. Dethman, Hood River, \$75; third, L. A. Herman, Hood River, \$50; fourth, J. L. Carter, Hood River, \$25.

Best five boxes (not more than two boxes of each variety)—First, Lawrence & Smith, Hood River, \$50; second, Peter Mohr, Hood River, silver medal; third, J. L. Carter, Hood River, bronze medal.

Best five boxes of Spitzenbergs—First, J. L. Carter, Hood River, \$50; second, F. A. Shogren, Mosier, silver medal; third, Peter Mohr, Hood River, bronze medal.

Best five boxes Yellow Newtowns—First, Home Orchard Company of Hood River, \$50; second, F. B. Friday, silver medal; third, F. C. Dethman, bronze medal.

Best three boxes Spitzenbergs—First, Fred Jacobs, 25; second, Lawrence & Smith, Hood River, silver medal; third, J. L. Carter, bronze medal.

Best three boxes of Ortleys—First, Peter Mohr, Hood River, \$20; second, Butterfield Bros., silver medal.

Best three boxes of Wageners—First, John Hakel, Hood River, silver cup, value \$20; second, H. G. Rumbaugh, Albany, silver medal.

Best three boxes in Mosier district—First, McCarger & Nordby, Mosier, \$20, offered by Portland Hotel; second, F. A. Shogren, Mosier, silver medal; third, James E. Carpenter, Dayton, bronze medal.

Best three boxes in Willamette Valley—First, Edwin Hamer, Salem, \$20; second, N. C. Jorgenson, Salem, silver medal; third, D. C. Van Dorn, Dayton, bronze medal.

Best two boxes, one of each variety—C. J. Tidcombe, of Scappoose, \$20; second, N. C. Jorgenson, Salem, silver medal; third, J. Beebe, Eugene, bronze medal.

Prizes offered by the Corvallis Commercial Club for the various exhibits from Benton County were awarded as follows: Best box of Spitzenbergs, Baldwins, Northern Spys, Kings, Wageners, Ben Davis and best decorated box—H. G. Rumbaugh, Albany, \$5 each.

Lane County awards were: For the best box in Lane County—First, F. L. Waite, Eugene, \$10; second, J. Beebe, Eugene, \$5.

For Linn County the awards were: Best exhibit, Albany Commercial Club, \$35; second, Henry Struckmeier, Thomas, \$15.

N. C. Jorgenson, of Salem, won the first prize for the best exhibit for Marion County.

Best commercial packed box in Willamette Valley—H. G. Rumbaugh, of Albany, \$10; second, D. C. Van Dorn, Dayton, bronze medal; third, Ernest Oleson, Gresham, diploma.

Best box of Spitzenbergs—First, Peter Mohr, Hood River, \$25; second, F. A. Shogren, Mosier, bronze medal; third, M. M. Hill, Hood River, diploma.

Best box of Yellow Newtowns—First, Lawrence & Smith, Hood River, \$25; second, F. P. Friday, Hood River, bronze medal; R. A. McCully, Hood River, diploma.

Best box of Jonathans—First, W. W. Fike, Hood River, \$25; second, H. Struckmeier, Thomas, bronze medal; third, B. Leis, Beaverton, diploma.

Best Baldwins grown West of Cascades—First, F. L. Wade, Eugene, \$10; second, J. Beebe, bronze medal; D. C. Van Dorn, Dayton, diploma.

Best Ben Davis—First, Epping & Rahles, Hood River, family scales; second, L. E. Clarke, Hood River, bronze medal; third, B. Leis, Beaverton, diploma.

Best Arkansas Blacks—First, Lawrence & Smith, Hood River, spraying device; second, Ed F. Reeves, Mosier, bronze medal; third, D. C. Van Dorn, Dayton, diploma.

Best Grimes Golden: First, Henry Struckmeier, Thomas pump; second, W. K. Newell, Gaston, bronze medal.

Best box of Hyde's King—First, Lawrence & Smith, \$10; W. K. Newell, Gaston, bronze medal.

Best Northern Spy—First, Epping & Rahles, Hood River, 100 cherry trees; second, H. F. McCormack, Eugene, bronze medal; third, W. K. Newell, Gaston, diploma.

Best Winter Banana—First, Home Orchard Co., Hood River, 100 cherry trees; second, W. Walther, The Dalles, bronze medal.

Best Delicious—First, W. S. Sherman, Hood River, \$5.

Best Gano—First, Lawrence & Smith, Hood River, \$5; second, B. Leis, Beaverton, bronze medal; third, Ed F. Reeves, Mosier, diploma.

Best King—First, D. C. Van Dorn, Dayton, \$5; second, H. G. Rumbaugh, Albany, bronze medal.

Best box of Red-Checked Pippin—First, John Ross, Mosier; second, D. C. Van Dorn, Dayton, bronze medal; third, B. Leis, Beaverton.

Best Rome Beauty—First, W. K. Newell, Gaston, \$5; second, J. F. Dangerfield, Scappoose, bronze medal; third, F. A. Gregory, Portland, diploma.

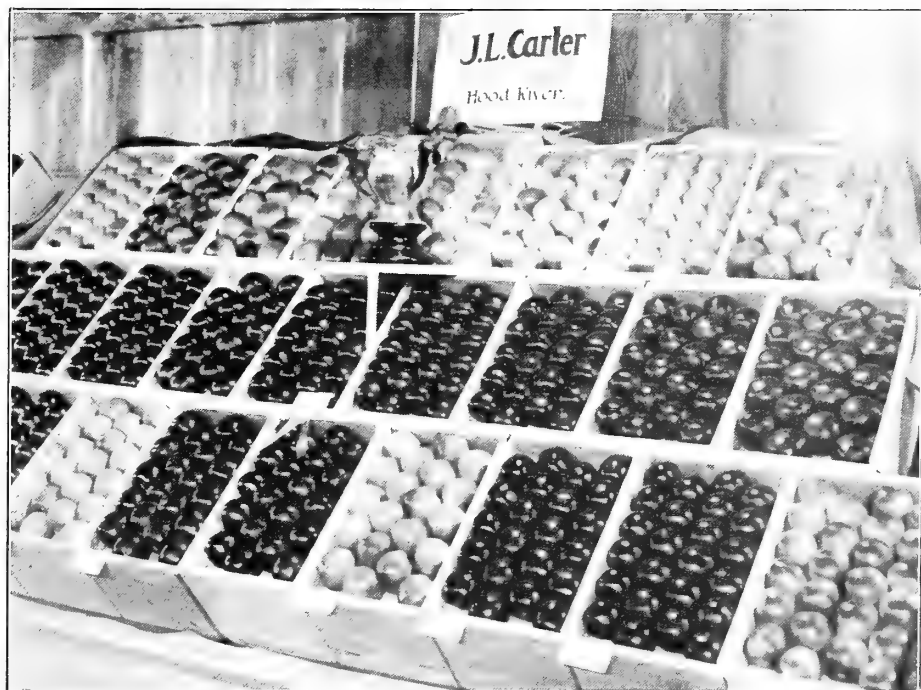
Best Vanderpool Red—H. G. Rumbaugh, Albany, \$5.

Best Winesap—L. E. Clark, Hood River, \$5.

Hood River County prize—Spitzenberg, first, M. M. Hill, \$10; second, L. E. Clark, \$10; third, W. Fike, diploma. Yellow Newtown—First, Home Orchard Co., \$15; second, W. Fike, \$10; third,



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
ELGIN, OREGON, DISTRICT DISPLAY WINNING SWEEPSTAKES PRIZE AT EASTERN OREGON APPLE SHOW, NOVEMBER 3-5, 1910  
A similar exhibit was made at the Oregon Apple Show, Portland, Oregon



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
DISPLAY OF J. L. CARTER, HOOD RIVER, OREGON, AT THE HOOD RIVER APPLE SHOW AND THE OREGON APPLE SHOW, PORTLAND, OREGON, 1910, WINNING FIRST PRIZE ON BEST FIVE BOXES OF SPITZENBERGS AND ON PLATE DISPLAY, BESIDES OTHER PRIZES

F. P. Friday, diploma. Pears—Best box or Winter Nellis—First, H. F. McCormack, Eugene; second, F. E. Waite, Eugene.  
 Special—Best box of any variety not mentioned—Ortlev, E. H. Ehrk, Hood River; Wagener, F. P. Friday, of Hood River; Black Twig, first, Lawrence & Smith, Hood River; second, H. O. Silverholz, Hood River. Golden Russets—James E. Carpenter, of Hood River.  
 Exhibit on plates—First, J. L. Carter, Hood River, \$5; second, James E. Carpenter, Mosier,

silver medal. Single plates—Baldwin, first, George Evans, Mosier; second, Romeo Goulet, Brooks; Ben Davis, first, C. L. McKenna, Portland; second, W. K. Newell, Gaston; Gano, first, J. E. Carpenter, Mosier; second, W. K. Newell, Gaston; Jonathan, Henry Struckmeir, Thomas; Northern Spy, C. J. Tithcombe, Scappoose; Red-Cheeked Pippin, J. E. Chipman, Oregon City; Rome Beauty, first, F. C. Dethman, Hood River; second, J. E. Carpenter, Mosier; Spitzenberg, first, W. K. Newell; second, F. C. Dethman, Hood River;

Swaar, F. C. Dethman, Hood River; Wagener, first, James, E. Carpenter, Mosier; second, F. A. Gregory, Portland; Winesap, W. K. Newell, Gaston; Winter Banana, F. A. Gregory, Portland; Yellow Bellflower, first, F. C. Dethman, Hood River; second, F. L. Waite, Eugene; Newtown, first, M. V. Rand, Hood River; second, F. C. Dethman. Diplomas were given to each winner.  
 Largest apple in the show—J. L. Carter, Hood River; variety, Gloria Mundi.

Five boxes of Spitzenberg apples, selected from the Mosier exhibit in the Portland Apple Show, to be sent to Emperor William I. of Germany by express, won the attention of the thousands who visited the show yesterday. The Mosier exhibit was withdrawn from the sweepstakes contest, owing to the ruling of the presiding judge that the apples were too large to meet the requirements of the American Pomological Society. The apples were three-tier, 34 to the box. Those to be sent to the German Emperor are uniformly of this size, and are deep red, with pink underglow, clear of skin, rounding at the base and very slightly inclined to bell shape.

The tables on the second floor, on which were located the display of insects and fungus growths from the Oregon Agricultural College, under the charge of Professor Bradley, assisted by two of his students, attracted attention. Explanations were constantly given of the value of precautions and the use of lime-sulphur solution for destroying fungus pests.

"I want to say," said Professor Van Deman, when he completed his work of judging, "that Oregon is an apple state to which there is no superior in the world. I do not mean by that it is superior to the Washington orchards, for I class all this section in one common apple territory. You have the world beaten in quality, size and color. Your color is what sells your apples in the East, coupled with the honesty of your pack. If you will continue to put your conscience into your apple box, you will win the markets of the world. There is no end to the possibilities of the apple markets of the world. If you organize—and I believe in the fruitgrowers organizing for the purpose of handling their product through a common agency—you can never supply the demand for the choice product of the Pacific Coast. The world beckons to you. It is only for you to listen to the voice of the market and win yourselves fame and fortune."

Within 60 days, Homer C. Atwell, of Forest Grove, president of the State Horticultural Society and of Portland Apple Show, will issue a call for a convention to be held in Portland of the apple-growers of the Pacific Northwest to organize a co-operative selling agency company, with \$500,000 capital, to dispose of the \$5,000,000 apple crop of Oregon, Washington and Idaho every year.

Details of the organization of the company will be considered by the members of the convention. Prominent apple-growers, representing different districts, will be present to participate in the formation of the company and the lines to be followed will be along those perfected by the raisin-growers of the Sacramento Valley, California, the orange-growers of Riverside, California, and the pear-growers of the Rogue River Valley, Oregon.

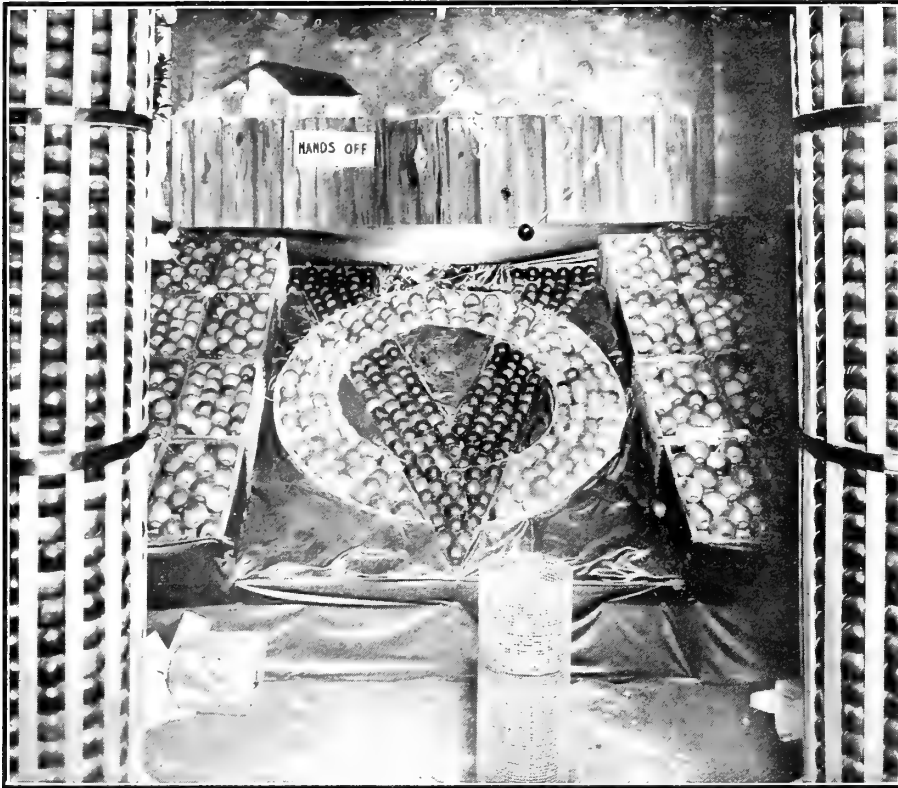


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

VERA, SPOKANE VALLEY, WASHINGTON, DISTRICT DISPLAY AT THE NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Engraved by Hicks-Chatten Co., Portland, Oregon

FIRST PRIZE WINNING CAR OF WINESAPS, GROWN BY H. M. GILBERT, NORTH YAKIMA, WASHINGTON, AND SECOND PRIZE WINNING CAR OF ROME BEAUTIES, GROWN BY J. HOWARD WRIGHT, NORTH YAKIMA, WASHINGTON, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



# THE NATIONAL HORTICULTURAL CONGRESS SHOW

BY L. GREEN, COUNCIL BLUFFS, IOWA

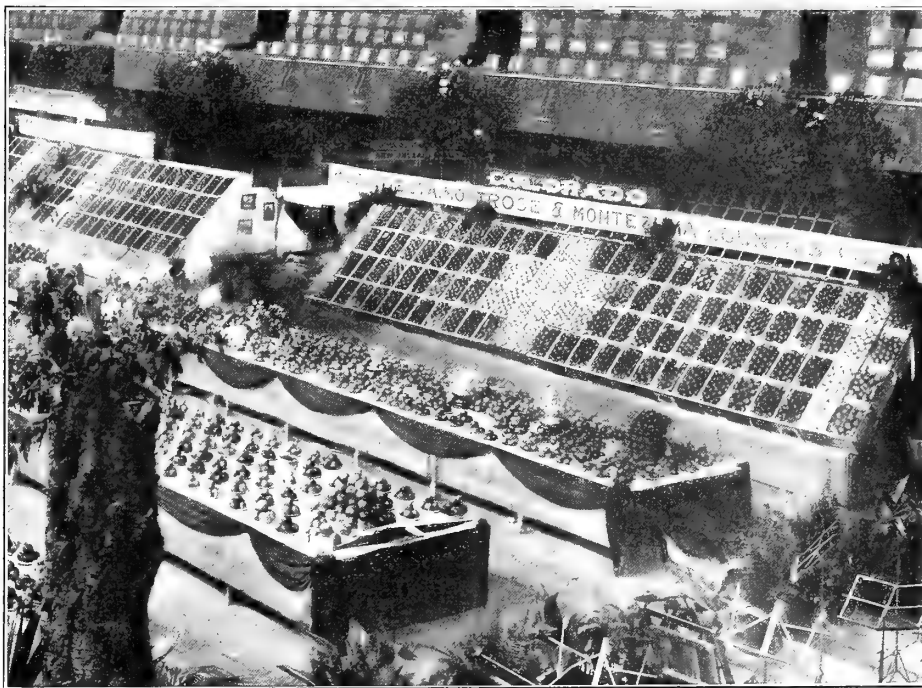
**N**O MORE pleasing effect could have been produced with fruits and flowers and decorative material, than that which presented itself to the visitors upon their entrance into the Third Annual Exposition of the National Horticultural Congress, recently held at Council Bluffs, Iowa. The whole effect was one of beauty and splendor and reflected much credit upon the management of the exposition. The centerpiece was a large palm tree surrounded with flowers and shrubs, presented by the Louisiana delegation. About this center was arranged the long tables which held the plate displays of all kinds of fruits and nuts. At the sides of these tables were the carload displays reaching from the table level to the balcony. The effect of such an arrangement can hardly be described. The auditorium in which the exposition was held has been recently decorated, being finished in Old English design, and the green and white of these decorations blended well with the fruits and flowers and the smilax which

abounded everywhere, and I hope many will avail themselves of the privileges you are affording them by gathering such a splendid exhibit for their inspection and information.

"The arrangement of the fruit, its quality, its beauty and its generous abundance all contribute to the most pleasing effect."

The National Horticultural Congress has endeavored to make these expositions different from all others by keeping the educational value of each feature uppermost in the minds of the exhibitors and visitors. They have spared neither effort nor expense to realize this ideal, and the

last exposition certainly crowned their efforts with success. They secured the best horticultural talent available for lectures and demonstrations. Their music has been furnished by the highest priced band in the country. This year the American Ladies' Band furnished this part of the entertainment. Governors and senators spoke at frequent intervals from the platform. In order that the educational features of the program might not be interrupted the lectures were held in a lecture room adjacent to the main auditorium, and that the public appreciated this feature was evidenced by the large crowds which attended from



Engraved by Hicks-Chatten Co., Portland, Oregon

VIEW SHOWING PRIZE WINNING COLORADO AND IDAHO APPLE EXHIBITS AT THE NATIONAL HORTICULTURAL CONGRESS, COUNCIL BLUFFS, IOWA, 1910



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

PARTIAL VIEW OF THE CORN EXPOSITION RUN IN CONNECTION WITH THE APPLE EXHIBIT AT NATIONAL HORTICULTURAL CONGRESS, COUNCIL BLUFFS, IOWA, 1910

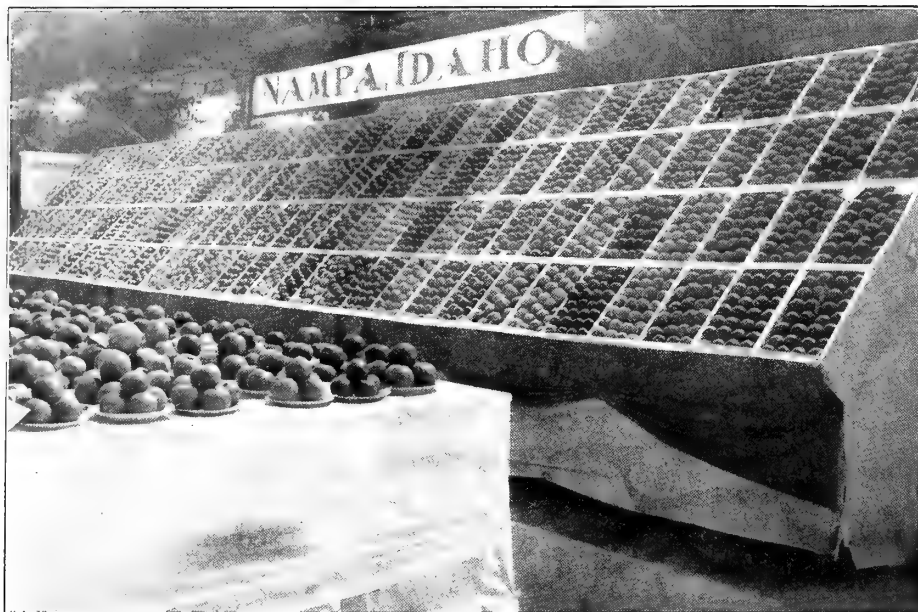


REN H. RICE

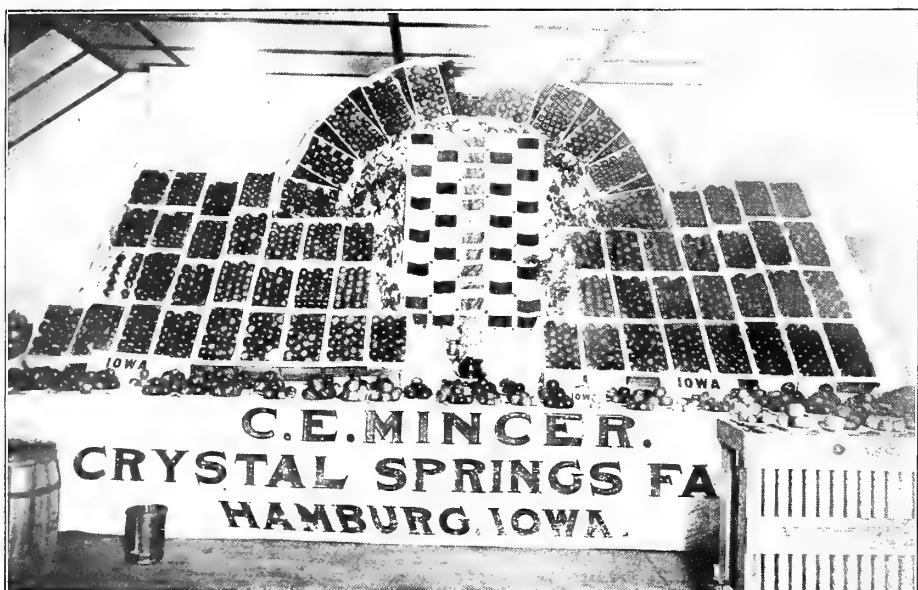
Successful manager of the National Apple Show, Spokane, Washington, and Chicago, Illinois

abounded everywhere. At the farther end of the room above the stage was hung a large painting illustrating a "Bloom Sunday in the Grand Valley" of Colorado.

Governor Carroll of Iowa expressed, in the opening remarks of his welcome address, the thoughts of most of the exposition visitors. Governor Carroll said: "You have every reason to feel proud of this exposition. It is beautiful and far beyond my expectations. I had no idea of the magnitude of the work the promoters of this institution were doing. It will be of immense advantage to all our people for it is something of a revel-



Engraved by Hicks-Chatten Co., Portland, Oregon  
 NAMPA, IDAHO, EXHIBIT AT THE THIRD ANNUAL APPLE EXPOSITION, NATIONAL HORTICULTURAL CONGRESS, COUNCIL BLUFFS, IOWA, 1910



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
 C. E. MINCER'S APPLE EXHIBIT FROM HAMBURG, IOWA, AT HORTICULTURAL CONGRESS, COUNCIL BLUFFS, IOWA, 1910



Photo by Frank Palmer, Spokane  
 Engraving by American Engraving Company, Spokane  
 LEWISTON, IDAHO, AND CLARKSTON, WASHINGTON, DISTRICT DISPLAY AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

day to day. Lectures covering the whole field of horticulture were given each day. And as a corn show was held in connection lectures upon other agricultural topics were given from time to time.

A spraying machine competition was held in which some of the principal manufacturers of spraying machines were entered. This competition was held under the auspices of the American Society of Agricultural Engineers, and was sanctioned by them only upon assurance that the tests should be made in a thorough and scientific manner. A report of this competition will appear in Better Fruit.

Spraying demonstrations occupied a place in each day's program under the direction of Prof. G. R. Bliss, of the Iowa State College Extension Department. These were well attended and much interest was shown in them as well as in a study of the different types of spraying machines and other implements used in orchard operations which were upon exhibition.

A students' judging contest was held between teams representing Kansas, Iowa and Nebraska. Fruit of ten varieties was arranged and judged by men selected for the purpose, after which the students' teams placed the fruit and gave their reasons for placing, orally. The team ranking highest for three successive years gains permanent possession of a silver loving cup, presented by the Omaha Bee. This cup was won last year by the Nebraska team and this year by the Iowa team.

Among the exhibits of fruits, which make up the principal feature of any fruit show, were many carload lots from the West and South. These were artistically arranged as has been suggested. Idaho probably had the largest combined display of any state. Carloads were received from Boise, Nampa, Payette and Council. These were all in the hands of men who know how to put up good exhibits. The Nampa exhibit occupied a prominent place to the right of the entrance, with the Payette exhibit opposite and the Council exhibit behind it. These as well as many of the other exhibits were accompanied by photographs showing the orchard operations as well as the prize fruit which is produced.

The exhibit which took more premiums than any other in the contest was the Colorado exhibit from Mesa, Delta, Montrose and Montezuma Counties. Over sixty ribbons were placed upon these plates. The Colorado growers went in together to make one of the most attractive exhibits shown. This exhibit was attended by a group of experts who were glad to answer any and all questions relative to methods of production, care and packing of fruit as well as to climate and cost of land in Colorado. One of their features was moving pictures showing orchard operations and scenery in different valleys of their state. This was a very effective method of advertising opportunities in the West.

Just back of the Colorado exhibit was that of the Manville Fruit Company and the Boise Valley Commercial Club. This exhibit took sweepstakes prize for the best commercial display of apples. The

quality of apples ranked high according to the grouping of the score card. The beauty of this exhibit was largely due to the efforts of Mr. B. F. Hurst, who had it in charge.

Twin Falls, Idaho, had the best exhibit at the exposition, from the standpoint of variety. Their exhibit contained a large variety of apples in addition to large quantities of vegetables of every type as well as field products, showing the possibilities of diversified farming in that region. This was in the hands of Mr. A. P. Senior, of Twin Falls.

Chelan, Washington, had a small exhibit of first-class fruit, prominent in which was the Delicious apple. They won first premium on this variety as well as a few others. This was all non-irrigated fruit and showed the possibilities of production in that region.

Of the Middle Western States, Mr. C. E. Mincer, of Iowa, had the largest exhibit. Mr. Mincer attracted much attention because of the quality of his

large "Lone Star" decorated the center of one of their big tables.

Louisiana was represented with an exhibit which was made up of a diversified lot of fruits. One day was given over to this delegation and was known as "New Orleans Day." A large delegation from New Orleans made it quite apparent that their city was the "logical

point" for the Panama Exposition in 1915. The Governor of Louisiana was to have been the principal speaker on that day, but was detained at the last moment and Senator Barrett of Louisiana spoke in his place. The senator won his hearers and gave a very good address.

Arkansas was represented by its State Horticultural Society, under the man-



## OGBURN'S FRUIT-GATHERING VESSEL

*Prevents Bruising Fruit, Saves Time & Money. See That Your Hardware Dealer Secures Agency For Next Season.*

Engraved by Hicks-Chatten Co., Portland, Oregon

AWARDED GOLD MEDAL BANNER FOR BEST IMPROVED APPLIANCE ON FRUIT-HANDLING VESSELS, NATIONAL APPLE SHOW, SPOKANE AND CHICAGO, 1910

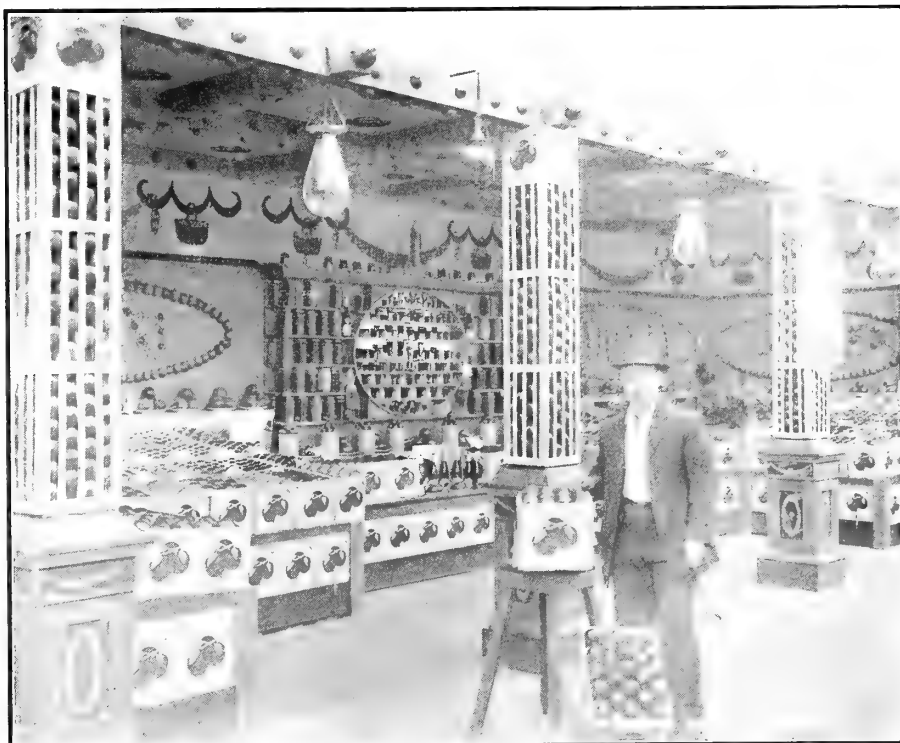


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
SECOND PRIZE NON-IRRIGATED DISTRICT DISPLAY, SPOKANE COUNTY, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE AND CHICAGO, 1910



L. G. MONROE

Secretary First Canadian National Apple Show, Vancouver, British Columbia, 1910, and now publicity manager Panama Exposition, to be held at San Diego, California. This exposition will be held in connection with the Panama Exposition, San Francisco, California, 1915.

fruit at last year's exposition. He also attracted his share of attention this year, because he was one of the few men in his section who was able to save his crop by orchard-heating. He had a large number of boxes as well as a variety of plate displays. One feature of this exhibit was a large number of boxes which were shown at last year's exposition and kept over in cold storage for this year's display.

Missouri, Kansas and Nebraska were well represented in the plate displays, and each had a few boxes on exhibit.

Texas sent a large display of apples, citrus fruits and nuts. They were given first premium on artistic display. A



agement of Mr. D. E. Eicher. They had a splendid exhibit from the Ozark region and took first premium on photographs showing orchard operations and products. The Arkansas exhibit and the Council, Idaho, exhibits were side by side and attracted much attention by their diversity of fruits and artistic displays.

Professors Hutt and Shaw, of Raleigh, North Carolina, were in charge of their state exhibits. The quality and variety

of their exhibits are shown by the fact that they took sweepstakes prize for the best general display of fruits. This display contained apples, pears, persimmons, citrus fruits, nuts and canned fruits and vegetables, and won many blue ribbons in the plate and nut contests. These exhibits covered two long tables and were very well arranged.

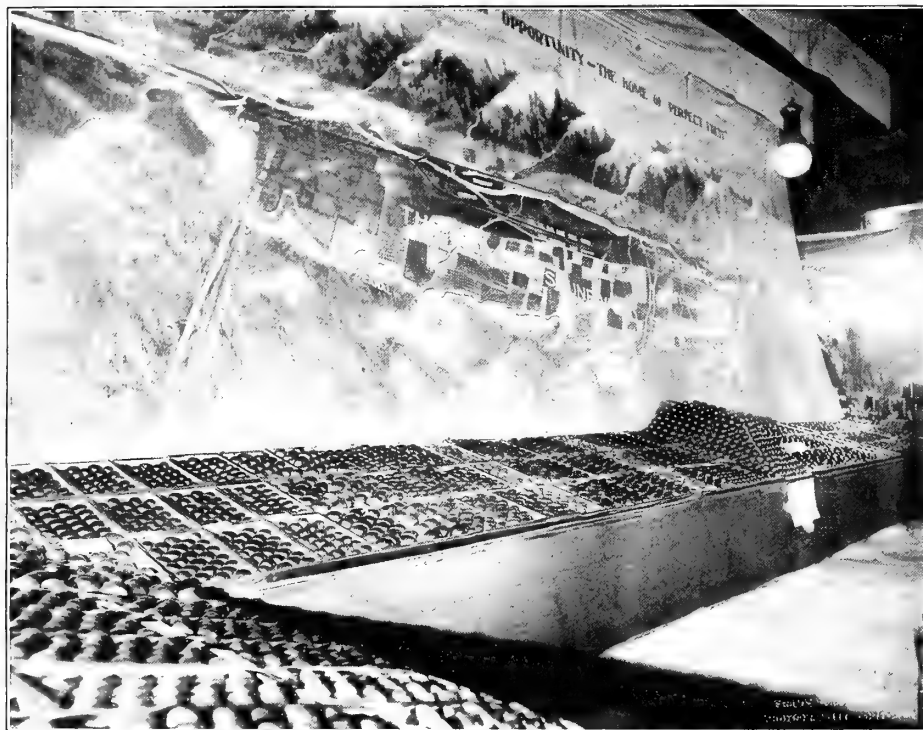
Maine was represented by a small exhibit of excellent plate displays, upon

which Mr. True, the exhibitor, won several blue ribbons.

The booth which contained the canned fruit was a pretty sight and brought out many methods of canning fruit. The canned goods were arranged upon shelves and all entries were assembled together, thus making the display of more interest.

The most beautiful booth was that of the J. F. Wilcox Floral Co. This firm had the decorating of the main auditorium in charge, and the beauty of both the booth and the auditorium speak well for Mr. Roy Wilcox, the decorator. This booth was daily supplied with fresh flowers, which kept it fresh and attractive. The design represented a room in one corner of which a bright grate fire was burning.

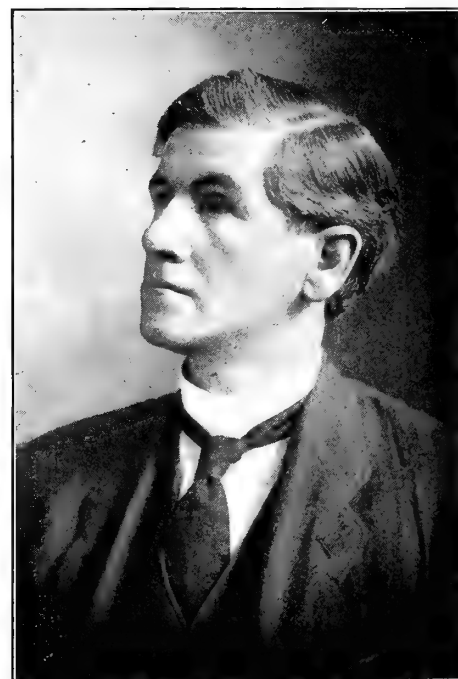
The vegetable room adjoined the main auditorium and was well filled with the



Engraved by Hicks-Chatten Co., Portland, Oregon

EXHIBIT OF BITTER ROOT VALLEY IRRIGATION COMPANY AT THE UNITED STATES LAND AND IRRIGATION EXPOSITION, CHICAGO, 1910

In the background of this view is shown a birdseye view of a part of the Bitter Root Valley, showing the location of the company's land.



AUGUST WOLF

Publicity manager of the National Apple Show, Spokane, Washington, and Chicago, Illinois

best that gardens from all parts of the country could supply.

The awards were made by the following committee of judges: Hon. Silas Wilson, of Nampa, Idaho; Prof. C. P. Close, of Maryland; Mr. Butts, a commission man of Omaha, and Mr. Walker, of Crete, Nebraska. General satisfaction was expressed by the exhibitors concerning the placing of the exhibits. That the judging was close was evidenced by the careful manner in which the judges went about their work.

The principal prizewinners are given below:

While several hundred premiums were given upon plates of apples, the following are those given on some of the more prominent commercial varieties: Arkansas, R. B. Boyd, Grand Junction, Colo.; Baldwin, J. A. Carr, Council, Idaho; Ben Davis, E. P. Taylor, Grand Junction, Colo.; Black Ben Davis, H. A. Richardson, Delta, Colo.; Buckingham, W. N. Hutt, Raleigh, N. C.; Colorado Orange, H. A. Richardson, Delta, Colo.; Spitzenberg, E. P. Taylor; Grimes Golden, Nampa Fruit Growers' Association; Ingram, D. E. Eicher, Bentonville, Ark.; Jonathan, Payette Valley Commercial Club; King David, W. J. Wilson; McIntosh, James C. True, Maine; Northern Spy, James C. True, Maine; Rome Beauty,

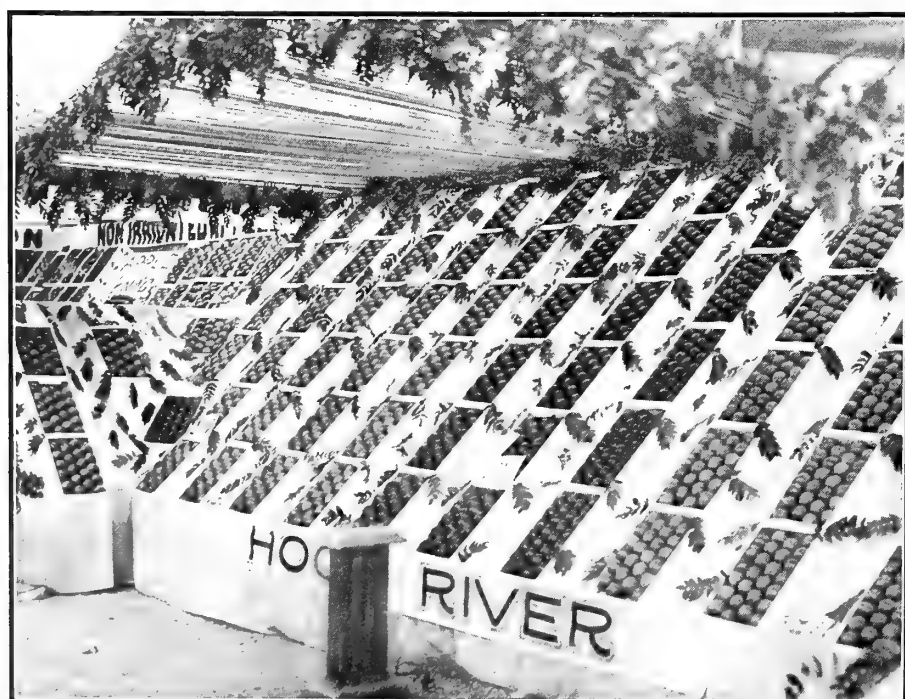


Photo by Frank Palmer, Spokane

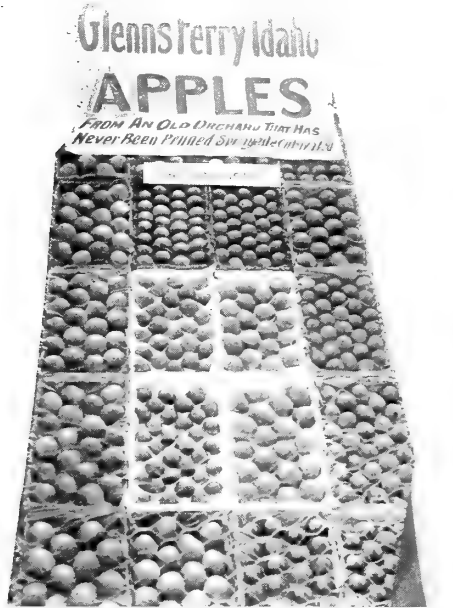
Engraving by American Engraving Company, Spokane

HOOD RIVER VALLEY, OREGON, DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

Payette Valley Commercial Club; Stayman Wine-sap, H. A. Richardson, Delta, Colo.; Wealthy, J. A. Carr, Council, Idaho; Winesap, E. P. Taylor; Winter Banana, J. A. Carr; Delicious, H. D. Miller, Chelan, Wash.

Sweepstakes, commercial apple display—Council Bluffs Commercial Club trophy. First prize valued at \$500. This exhibit was limited to five varieties, five boxes of each variety. Won by B. F. Hearst for the Boise Commercial Club.

Carload contest, commercial apples—Open to all; Six hundred dollars in cash prizes. First premium \$300. Two hundred ten barrels or 630 boxes to



Engraved by American Engraving Co., Spokane  
GLENN'S FERRY, IDAHO, APPLE DISPLAY  
From an old orchard that has never been pruned, sprayed or cultivated. Think what the result would be with scientific care. National Apple Show, Spokane, Washington, November, 1910.

Photo by Frank Palmer, Spokane.

constitute a carload. Won by the Payette Valley, Idaho.

County commercial apple special—Prize, copper trophy, presented by the National Horticultural Congress; valued at \$100. Five varieties to be shown in standard boxes, five boxes of each variety. Won by J. A. Carr, of Council, Idaho.

Individual commercial apple special—Prize, one Bean Magic spray pump. Exhibit to consist of four varieties to be shown in standard boxes, three boxes of each variety. Won by Nampa, Idaho.

Gulf States special apples, plate display—First prize, silver trophy, valued at \$150. For the best display of apples from any of the Gulf States, North and South Carolina and Georgia. Won by North Carolina.

Commercial package exhibit, barrel of apples—First prize, a man's overcoat, won by Professor Hutt, of North Carolina.

Gerner special—For the best standard box of apples exhibited by any individual from any state in the Union—Won by H. A. Richardson, Delta, Colorado. First prize, a silver trophy valued at \$75.

Stark Brothers' special—For best plate Delicious apples. 250 Delicious apple trees, won by H. D. Miller, Chelan, Wash.

Six plates of winter apples for family use—Exhibit to consist of six varieties. Won by Nampa, Idaho.

Ten plates shown by any grower, any variety—Won by Nampa, Idaho.

Largest sound apple—Prize, a gold medal, won by J. A. Carr, Council, Idaho, with a Wolf River apple of large size and splendid color and texture.

Rome Beauty apple, best bushel box—Prize 250 Rome Beauty apple trees, 1 year old, 4 to 5 feet in height, won by the Manville Fruit Company, Boise, Idaho.

Scaleside special—Silver trophy. Trophy becomes the property of the exhibitor winning it twice. Won this year by J. A. Carr, Council, Idaho, on one box of each of three varieties.

Special, orchard photos, best collection of orchard views—Prize, silver loving cup. Size, excellence, arrangement and educational value considered. Won by D. E. Eicher, Fayetteville, Ark.

Four hundred fifty dollars in prizes for the best general display, other than vegetables, made by any state—North Carolina won the first prize of \$300 by having the largest variety of fruits and nuts of good quality.

General district or county display, United States, Mexico and Canada—Won by Colorado. First prize, a beautiful sterling silver trophy valued at \$150, given by The National Horticultural Congress.

Best general display of pears in commercial packages—First prize, copper loving cup, won by J. A. Carr, Council, Idaho, on several boxes of most excellent pears.

General collection of nuts shown by one exhibitor—First prize, silver loving cup, won by C. B. Shaw, Raleigh, N. C. Mr. Shaw had a large variety as well as a large collection of nuts, including chestnuts, peanuts, almonds, pecans, etc.

General collection of citrus and other sub-tropical fruits—First prize, a beautiful silver trophy valued at \$300, won by C. S. Canada, of Houston, Texas.

Exhibit of grape fruit—First prize, silver loving cup, won by C. S. Canada.

Best box of oranges—First prize, silver loving cup, won by C. S. Canada.

Most artistic and well-kept general floral display—First prize, silver loving cup, won by Roy Wilcox, Council Bluffs.

There was much discussion as to whether it would be advisable to hold the next annual exposition in Council Bluffs

or in one of the other cities which were bidding for it. The general expression of the exhibitors was that more courteous treatment could not have been accorded them than was received this year at the hands of the Council Bluffs people, but some of them thought that a change of location would be an advantage from an advertising standpoint. The location of the next exposition was left to the executive committee, and it is probable that if a change is made, the show will go to Saint Joseph, Missouri. Wherever it is held the officers of the next show will have a difficult task to equal the success of the past year.

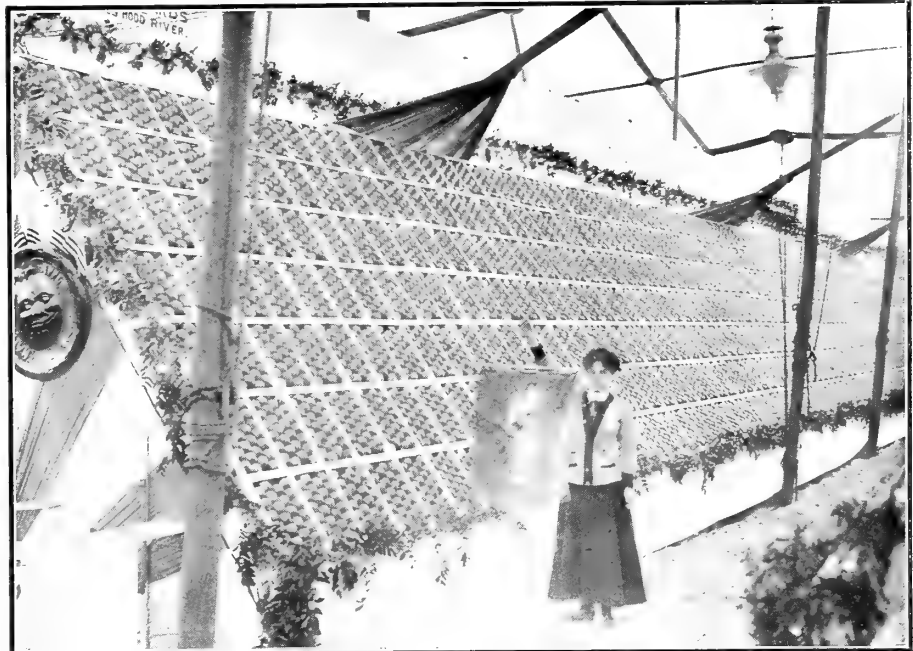


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
FIRST PRIZE CARLOAD OF YELLOW NEWTOWN PIPPINS, SCORING 988 POINTS OUT OF A POSSIBLE 990, GROWN BY AVERY BROTHERS, HOOD RIVER, OREGON. NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane  
WHITE SALMON VALLEY, WASHINGTON, DISTRICT DISPLAY AT THE NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

This display was in charge of Miss Cameron, who is shown in the picture, and who is probably the first woman publicity secretary of a development league or commercial club in the United States.



# APPLE ANNUAL AT WATSONVILLE, CALIFORNIA

BY JONATHAN EDWARDS, WATSONVILLE, CALIFORNIA

**T**HE first all-California apple show had its inception in October, 1909, when a committee of twenty-five local growers, packers and business men, was appointed by Mr. E. A. Hall, president of the Commercial League of Watsonville, to consider the advisability of holding an exhibition of the fruit, the production and marketing of which has long constituted the principal industry of the Pajaro Valley.

For a considerable period the yearly shipments of apples from this valley had

exceeded three thousand carloads. The yearly profits from the industry had run into millions of dollars. The production of other sections was increasing. Competition was constantly growing keener. This section had given comparatively little attention to the work of advertising itself or its products. As in all other sections there was room for improvement in methods of production and marketing. The holding of an annual apple show in Watsonville was suggested as being one thing well calculated to increase the

demand for the fruit, extend her markets, and through the rivalry created, to stimulate growers to produce better fruit and the packers to raise their standard.

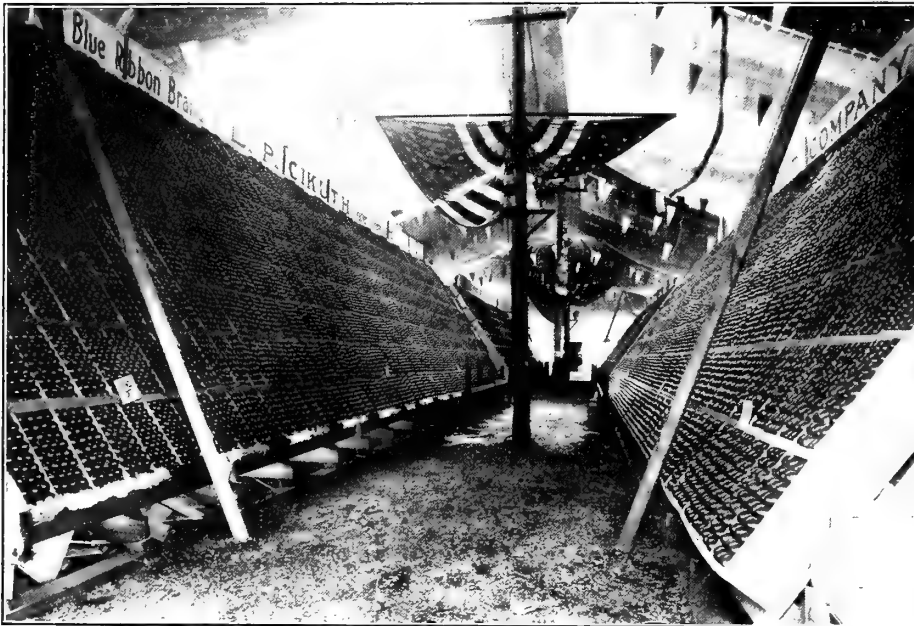
An executive committee of fifteen was selected and on November 11, 1909, for the purpose of expediting their business, incorporated under the name Watsonville Apple Annual Association. The movement thus inaugurated had its culmination in the "Apple Annual" of 1910, "An Apple Show Where Apples Grow," in magnitude by far the greatest and in quality the equal of any apple show up to that time held.

By means of a municipal bond issue funds were raised and an auditorium, of the dimensions of 100 feet by 215 feet, having gallery space of approximately one-half that on the main floor, was constructed by the City of Watsonville. Originally designed to be merely a local affair, it was thought that the show could be housed in this building. However, it was soon apparent that there was a demand, almost universal, that the scope of the show be made statewide. This demand was met, and when the exhibits were all in place they crowded to overflowing not only the building, but three huge tents, occupying in all more than 70,000 square feet.

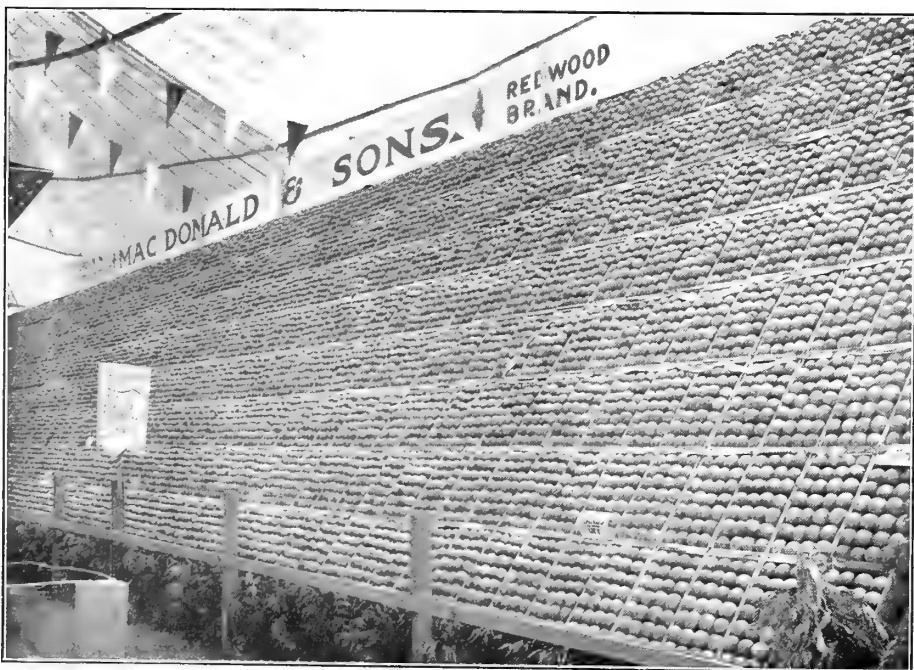
It is difficult to convey an adequate idea of the magnitude of the exhibition through the medium of mere figures. In fact, through lack of any standard of comparison, a large proportion of those who saw the show failed to obtain a true conception of its size. Moreover, to residents of the locality familiar with the valley's daily shipments of as many as ninety-five carloads, its size did not appeal as it would and did to those not familiar with operations on such a scale. To those who were not privileged to see the show the story must be told and resort to statistics must be had.

The total number of entries, in all classes except industrial machinery, spray materials and fertilizers, was 1,219, as follows: Fifteen in the carload class, 29 in the 100-box class, 30 in the 25-box class, 116 in the 10-box class, 175 in the 5-box class, 240 in the 1-box class, 892 in the plate displays, 14 feature exhibits, 10 of evaporated apples, 5 of factory and 7 of domestic by-products. There were entered in competition 14,925 commercially packed boxes. Altogether there were exhibited 2,355,283 apples, or more than 26 carloads of 640 boxes each.

An accurate statement of the total number of varieties shown is impossible, for the reason that no account was kept of those shown in the mixed lots. The scope is fairly well shown, however, by the number of varieties exhibited in the unmixed lots. There were four straight carloads of the Yellow Newtown Pippin, three of the Red Pearmain, two of the Yellow Belleflower, one each of the Langford Seedling, the Esopus Spitzenberg and the White Winter Pearmain and three mixed cars, representing seven additional varieties, making thirteen in all. In the 100-box lots there were but



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
VIEW DOWN CENTER AISLE OF TENT 2, WATSONVILLE APPLE ANNUAL  
WATSONVILLE, CALIFORNIA, 1910  
In each of the two large tents there are ten carloads of apples on exhibition



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon  
GOLD MEDAL CAR OF YELLOW BELLEFLOWERS AT APPLE ANNUAL, WATSONVILLE,  
CALIFORNIA, 1910  
By MacDonald & Sons, Watsonville, California. In color and uniformity this was probably the finest  
car of Belleflowers ever put up.

three varieties shown singly, but in the prizewinning entry of mixed lots in this class there were eighteen varieties. In the unmixed 10-box lots there were nineteen varieties, twenty-four in the 5-box, thirty-seven in the 1-box and eighty in the plate exhibits.

Fifteen counties were represented, ranging from Modoc, in the extreme northeast corner of the state, southward seven hundred miles to Los Angeles, and the fact that to exhibitors from counties lying wholly outside of the Pajaro Valley and the apple district centering in Watsonville, one hundred won first and thirty second prizes were awarded, is conclusive evidence of the high quality of the fruit grown throughout the state.

Thirteen of the carload lots were shown by local packers; two were exhibited by the Gravenstein Apple Show Association, of Sebastopol, Sonoma County, as agent for the growers. The displays made by Sonoma, Tuolumne, El Dorado, Butte, Modoc and San Luis Obispo Counties were of such magnitude and exceptional quality as to attract universal attention and commendation. The variety, color, size and quality of the apples brought from these counties were such as are rarely equaled and never surpassed. For example, Sebastopol made 45 entries, 1,385 packed boxes and 12 plates, showing fourteen standard varieties. These entries were awarded 20 first and 9 second prizes, and the average score for the 1,385 boxes was 95.7-10 per cent. Tuolumne County, with 75 entries, 61 plates and 14 boxes, including 36 varieties, carried away 34 first and 10 second prizes. El Dorado County, with 78 entries, 64 boxes and 46 plates, was awarded 24 first and 2 second prizes. The board of judges was composed of Mr. George E. Rowe, Grand Rapids, Michigan, as chief judge, with Mr. George C. Roeding, Fancher Creek Nursery, of Fresno, California, and Mr. A. Levy, of San Francisco, California, all men of more than twenty years' experience in the business of judging apples. A uniform number of boxes from each carload and 100-box lot, and one each from the smaller lots were selected as samples, and every apple in each box was carefully and personally inspected by the judges.

The scoring of points was made by the following card, preference, in the carload and 100-box classes, being given to the straight four-tier pack, that being the standard in this district: 100 a perfect score, the judges allowing 75 for perfect fruit, 10 for uniform size, 10 for color, 5 for pack. Score off 5 points for a wormy apple, 1 point for any other imperfection, scab or scale on apple, 1 point for loose pack, 1 point for lack of perfect pack.

A few carelessly selected and poorly packed lots in each class lowered the average score of the whole show, but as will be seen by the scores made by winners, the rating was otherwise surprisingly high.

The sweepstakes car, exhibited by Alaga Bros., of Watsonville, and composed one-third each of the Yellow Belleflower, Red Pearmain and Yellow Newtown Pippin, scored 93.1-3%. The

two cars shown by the Gravenstein Apple Show Association, of Sebastopol, one a straight car of Spitzenberg and one a mixed car of eight varieties, were a close second, with a score of 92.1-3%.

The winner of the trophy offered by Garcia-Jacobs, Simons-Jacobs and Simons-Shuttleworth, of London, Liverpool and Glasgow, for the best 25 boxes of Yellow Newtown Pippins, Frank Radovan, of Watsonville, scored 95%. The second best in this class, by Harry

T. Davis, of Corralitos, scored 94½%, and 16 entries scored 90% or better.

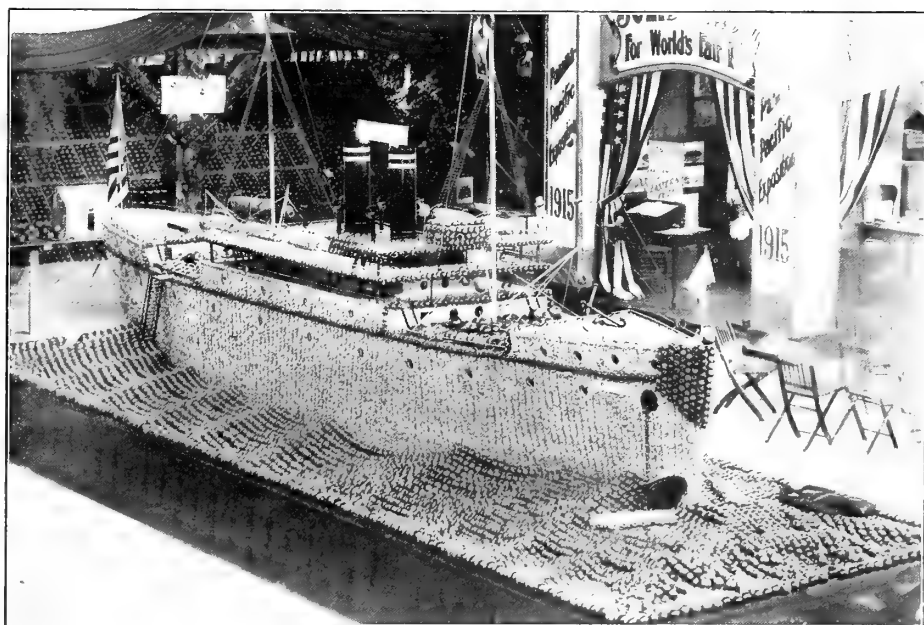
In the 100-box class the sweepstakes prize was won by Mr. Stephen Scurich, of Watsonville, with a score of 96%. Mr. H. T. Davis, of Corralitos, was second with a score of 95½%, and 15 exhibitors scored 90% or better.

The Gravenstein Apple Show Association, of Sebastopol, captured the sweepstakes prize in the 10-box class, with a fine lot of Gravensteins scoring 100%.



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

TUOLUMNE COUNTY EXHIBIT, APPLE ANNUAL, WATSONVILLE, CALIFORNIA, 1910. In this exhibit twenty-six varieties were shown. Thirty-three first and ten second prizes were won by it. Next to this exhibit was the splendid exhibit from El Dorado section. No view of this, nor of the Butte section, which adjoined El Dorado exhibit, was obtained.



Engraved by Hicks-Chatten Co., Portland, Oregon

THE GOOD SHIP "PAJARO" CARRYING A CARGO OF WATSONVILLE APPLES THROUGH THE PANAMA CANAL. Feature exhibit by the Japanese Association of Watsonville, California, at Apple Annual Watsonville, California, 1910.

Five lots in this class scored 100%, five scored 99% and 35 scored 95% or better.

The sweepstakes prize in the 5-box class was awarded to Mr. F. C. Price, on Yellow Belleflower, grown on his ranch near Watsonville, his score being 100%. In this class there were six perfect scores, 10 of 99% each and 59 of 95% or better.

In the 1-box class there were 20 scores of 100%, and 147 of 95% or better.

The sweepstakes plate was shown by Mr. A. E. Elsbree, of Sonora, Toulumne County, with five huge Wolf River apples, while the largest apple in the show was brought by Mr. F. J. Ralph, also of Sonora. It was a Wolf River, measuring 17 inches in circumference and weighing 23 ounces.

The feature exhibits ranked high in artistic design, and in their significance to the apple industry. Rated as first by

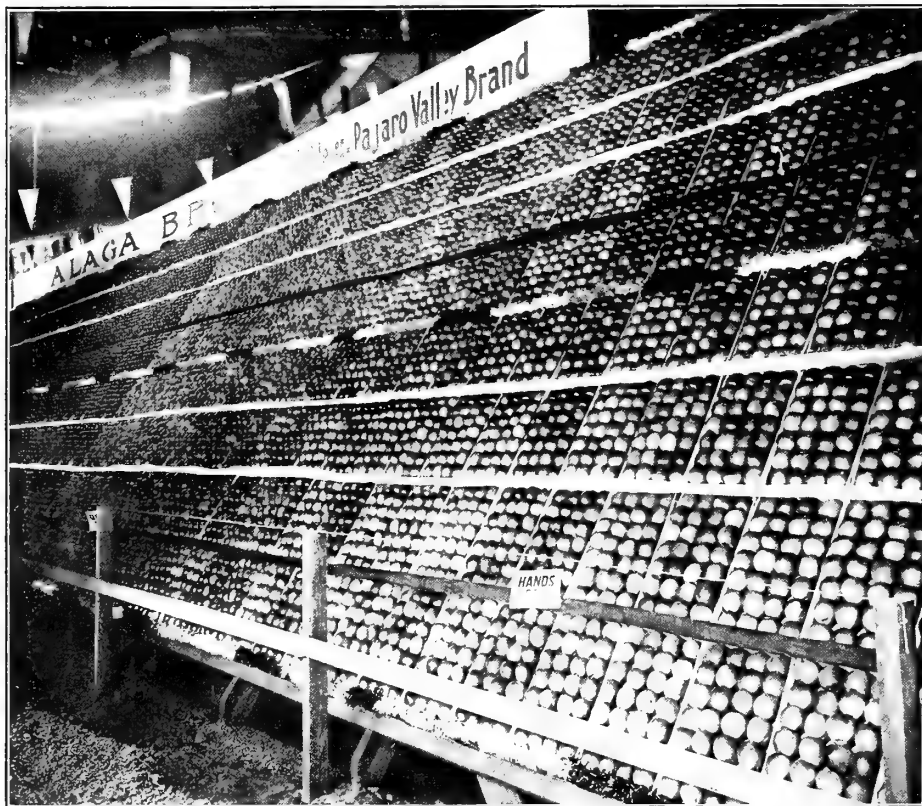
the judge of this class, Mr. J. A. Filcher, secretary of the State Agricultural Society, was the "Kiss of the Waters," by San Monte Fruit Co., of Watsonville. This consisted of a large disc mounted on a suitable pedestal. On each side of the disc was shown the Western Hemisphere in green fruit, the Pacific and Atlantic Oceans being done in dried apples and in the likeness of the faces of beautiful women, their lips meeting at the site of the Panama Canal.

Second place was given to the Japanese Association, of Watsonville, on a large ocean steamer, complete in every detail, covered with dried fruit, trimmed and loaded with fresh, and sailing through a sea of green apples fashioned in the likeness of waves. Another feature worthy of special mention was the Transformer, shown by the Gravenstein Apple Show Association, a unique machine into one end of which Gravenstein apples were automatically fed while from the other poured a stream of twenty-dollar gold pieces.

There were approximately 30,000 admissions to the show, among them an excursion trainload of five hundred prominent bankers from the State of New York, and representatives from more than twenty states and foreign countries. Local people financed the exhibition exclusively, with the exception of \$500 in cash and a number of beautiful trophies contributed by loyal friends elsewhere. With all bills paid and all racks and fixtures intact, the association finds itself, at the close of the first show, with a cash balance of approximately four thousand dollars.

During the week of the "Apple Annual," daily lectures on pertinent topics of interest to growers and packers, were given by eminent specialists, and this proved to be one of the most attractive and thoroughly beneficial features of the show.

To Watsonville and the Pajaro Valley and to the whole State of California this exhibition has had a value not to be measured in dollars and cents. California as an apple-growing state, though producing yearly more than 5,000 carloads of this fruit, has been little known. The fame of her first show has spread to the uttermost parts of the earth and the publicity thus gained of necessity must result in an increased demand for her product and a material extension of her markets. Among the lessons of the show is that one most important, most simple and yet most difficult to master, that to keep pace with our competitors, to satisfy our consumers, to maintain and extend our markets and to obtain satisfactory prices, we must make quality our watchword and an honest pack our invariable rule of practice. Here, as elsewhere, along all these lines there is room for improvement. The "Apple Annual" of 1910 has done much for our state in these vital respects. In 1911 we hope to have every county and every apple-growing section in the state represented, and to maintain for California the distinction of yearly holding the best and greatest apple show on earth.



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

SWEEPSTAKES CAR, APPLE ANNUAL, WATSONVILLE, CALIFORNIA, 1910  
Yellow Belleflowers, Yellow Newtown Pippins and Red Pearmaines. By Alaga Brothers, Watsonville, California. Score 93 1/3 %

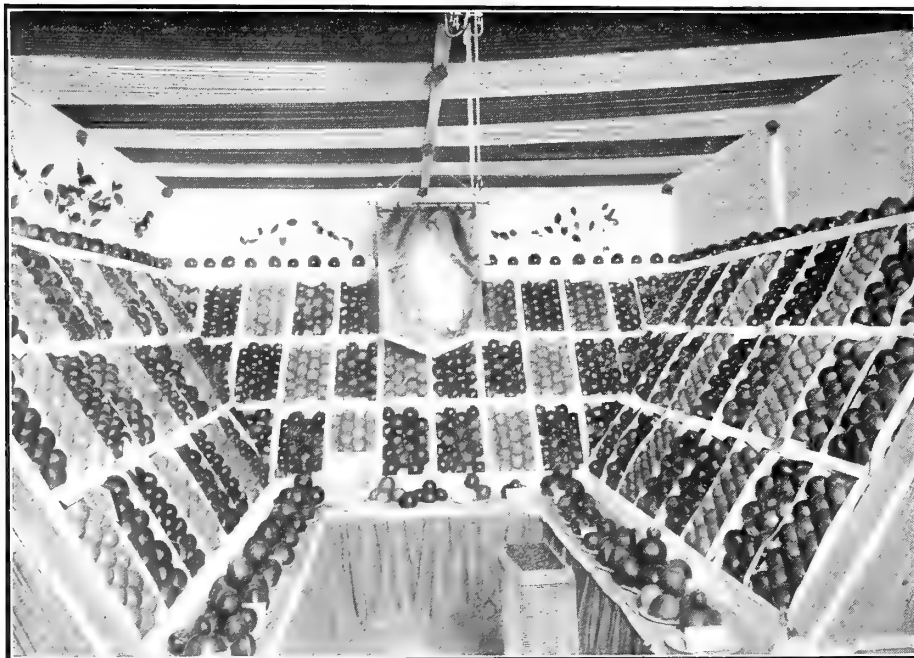


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

SECOND PRIZE IRRIGATED DISTRICT DISPLAY FROM VALE OF CASHMERE, CENTER OF WENATCHEE VALLEY, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, AND CHICAGO, ILLINOIS, NOVEMBER 28-DECEMBER 4, 1910



The rules under which the boxmaking contest was conducted were as follows:

Duration of contest, one hour. Each contestant to provide his own bench, hatchets or hammers and stripper. Contestants are not obliged to use strippers. Each contestant should provide himself with at least one extra hatchet or hammer. The Association will provide nails and box shooks.

The box used shall be the standard 4A apple box of the following dimensions: Heads, 11/16x9 3/4x11; sides, 5/16x9 3/4x22, no cleats to be used; bottoms, 5/16x5 1/4x55.

Pearson Cement Coated 5d. box nails shall be used, 28 to each box; four in each end of each side and three at each end of each bottom piece. Nails must be well driven and well spaced and must not protrude from either inside or outside of head.

Benches must be empty of all material at start of contest with exception of hatchets or hammers and stripper; nails to be placed in bottom box of stripper before start, but none fed into tracks until contest has started.

Box material to be stacked six feet from contestant in such way as to be easily accessible; contestant must arrange his shook on bench after contest starts. Boxes after being made must be piled in nests of three, and if at the expiration of time limit, any contestant shall have not so piled any of his boxes, those not piled shall not be counted to his credit. In making boxes the sides and bottom pieces must be placed square to head and bottom pieces properly spaced.

Thirty-six points shall be allowed for each box made during the time limit according to these rules:

1. For each nail the point of which can be seen either inside or outside of finished box the judges shall deduct two points from the contestant's score.
2. For each nail used above 28 in any one box, one point shall be deducted.
3. For each nail less than 28 used in each box, a penalty of two points per missing nail shall be deducted.
4. If any contestant draws a nail from a box on account of it not being driven true and replaces same by another nail, no deduction of points shall be made for same.
5. If shook should be slightly out of true such fact should be recognized by the judges and not charged against contestant.

For general excellence of work in spacing nails and material the judges shall be allowed to allot in their discretion to individual contestants any part of an additional 100 points, and for poor work of the same description, shall be allowed to penalize individual contestants by the deduction of any part of 200 points; the condition of the bench at close of contest and wasted nails shall enter into this addition or deduction of points.

As prizes for this boxmaking contest two fine gold watches were given to the two best boxmakers, by J. C. Rulofson, Monadnock building, San Francisco, California, of the Pearson Cement Coated Nail people.

The apple-packing contest was conducted under the following rules:

Each contestant shall be furnished with enough loose boxes of sorted four-tier Newtown Pippins to pack five boxes.

A time limit of 40 minutes shall be set for packing the five boxes. In order to secure the full amount of credits for speed, the contestant must pack five boxes within 40 minutes. A penalty shall be charged for excess time consumed at the rate of two points for each three minutes or fraction thereof over the 40 minutes.

The scoring values are as follows: Speed, 20 points; uniformity, 10; alignment, 10; bulge, 15; height of ends, 15; firmness, 15; and wrapping, 15, making a total of 100 points.

There will be two contests, one for men and one for women. The prizes shall be as follows:

Men's contest—First, gold watch; second, silver watch. These prizes were donated by Northern California Paper Trade.

Ladies' contest—First, gold watch; second, silver watch. These prizes were donated by the Pioneer Paper Co., Los Angeles.

Apples are to be wrapped and packed a straight four tier. Apples will be distributed to packing tables, paper and boxes supplied, and then contestants will draw lots for location. Packing tables, boxes, apples and paper will be supplied to contestants without charge.

Men will remove their own packed boxes; in the women's contests the boxes will be removed from the packing tables for them.

If any contestant prefers his own packing bench he shall be allowed to use same.

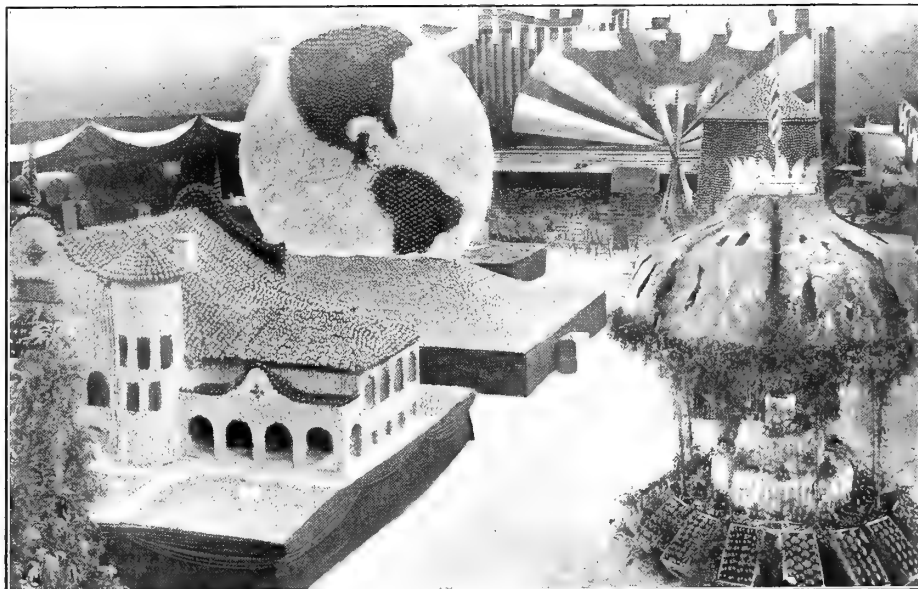
If any contestant does not complete his five boxes within one hour, the entry shall be thrown out.

The entries in the different classes were numerous and competition keen in the special features and contests of skill. Below we give a partial list of awards:

Carload Lots, Newtown Pippin: \$100 silver trophy by National Ice & Cold Storage Co., of San Francisco; 100 pounds Ortho arensate of lead by California Spray Chemical Co., Watsonville; 1st, M. N. Lettunich & Co., Watsonville; 2d, McDonald & Sons, Watsonville. Belleflower: \$100 cash by National Ice & Cold Storage Co., Los Angeles; 1st, MacDonald & Sons, Watsonville; 2d, San Monte Fruit Co., Watsonville. Mixed Varieties: Silver trophy by California Fruit Distributors, Sacramento; 500 pounds Ortho iron sulphide by California Spray Chemical Co., of Watsonville; 1st, Alaga Bros., Watsonville; 2d, Sebastopol Gravenstein Apple Show Association. Red Pearmain: 1st, L. P. Cikuth, Watsonville; 2d, Loma Fruit Co., Watsonville. White Pearmain: Loma Fruit Co., Watsonville. Langford Seedling: Frank Radovan, Watsonville. Spitzenberg: Sebastopol Gravenstein Apple Show Association.

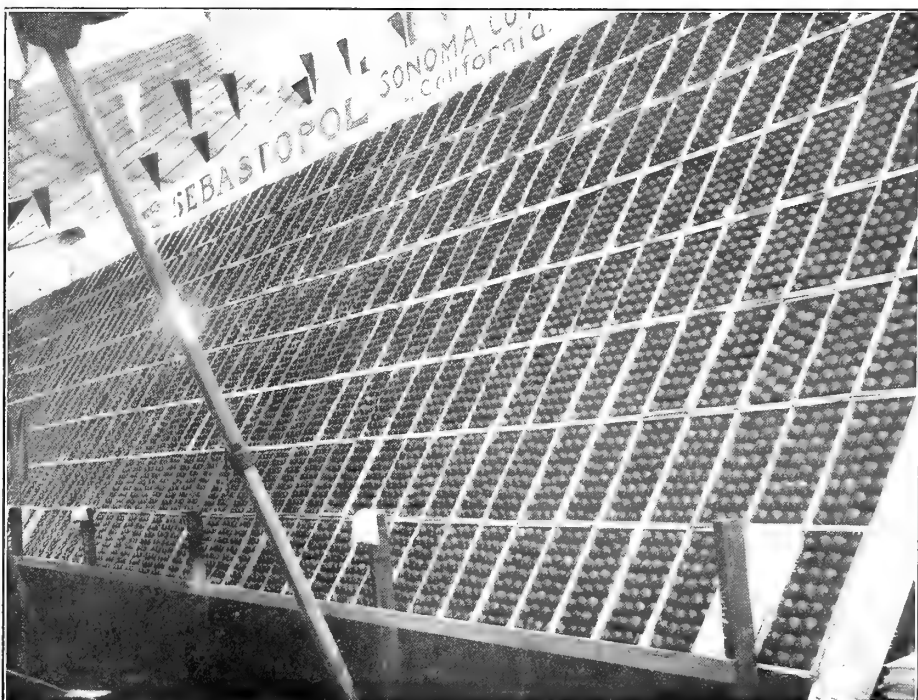
Additional Awards—Best carload each variety, gold medal. Best carload exhibited, special sweepstakes, gold medal. Second best carload each variety, silver medal; to each winner of first and second prize in this class, one year's subscription to *Fruit Belt* and *Pacific Coast Packer*; to winner (sweepstakes), one year's subscription to *Better Fruit*; best carload exhibited (sweepstakes), \$250 cash by the following commission merchants of San Francisco: L. Scatena & Co., Garcia & Maggini Co., Garcia Bros. & Arken, Compodico & Burns, Ivancovich-Trobock & Bergen Co., Jacobs & Malcom, A. Galli Fruit Co., A. Levy & J. Zentner Co., L. N. Presovich & Co., L. J. Hopkins Co., and silver trophy by San Francisco Chamber of Commerce, awarded to Alaga Bros., Watsonville; best commercial grading and pack of apples exhibited, not less than 100 boxes, silver trophy, by International Apple Shippers' Association, awarded to San Monte Fruit Co., Watsonville.

One hundred Box Awards—Belleflower Apples: 1 barrel Ortho lime and sulphur solution; 1st, Stephen Seurich; 2d, R. H. Goodchild, Corralitos.



Engraved by Hicks-Chatten Engraving Company, Portland, Oregon

GENERAL VIEW OF FEATURE EXHIBITS, APPLE ANNUAL, WATSONVILLE, CALIFORNIA Showing the first prize, "The Kiss of the Waters," by San Monte Fruit Company of Watsonville, California; the High School for Boys and Girls feature exhibit, exact reproduction of the High School building, and others. The idea of feature exhibits would be well worth copying at our exhibits in the Northwest, as they are one of the greatest drawing cards and break the monotony of solid box exhibits.



Engraved by Hicks-Chatten Co., Portland, Oregon

GOLD MEDAL CAR OF SPITZENBERGS, APPLE ANNUAL, WATSONVILLE, CALIFORNIA By Gravenstein Apple Show Association of Sebastopol, Sonoma County, California. Score 92 1/3 %

Newtown Pippin: 1 barrel Rex lime and sulphur solution, given by Rex Spray Co., Benicia; 1st, Travers Bros.; 2d, Elwell Russell Fruit Co., Santa Cruz. Red Pears: Zar Bros., Watsonville. Mixed Varieties: silver trophy and \$75 cash, given by Pajaro Valley National Bank; 1st, H. T. Davis, Corralitos; 2d, Frank Radovan, Watsonville.

Additional Awards.—Best 100 boxes each variety, gold medal; to each winner of first and second prize in this class, one year's subscription to *Fruit Belt* and *Pacific Coast Packer*; to winner (sweepstakes) one year's subscription to *Better Fruit*; best 100 boxes exhibited (sweepstakes), 1000 standard pine apple boxes in shook, by the Hilm-Hammond Lumber Co., Watsonville; Stephen Scurich, Watsonville, Cal.

Twenty-five Box Special.—Newtown Pippin: Silver trophy by Garcia-Jacobs, Simon-Jacobs, and Simons-Shuttleworth, of London, Liverpool and Glasgow; awarded to Frank Radovan, Watsonville, Cal.

Ten Box Awards.—Newtown Pippin: \$50 cash, given by the Bank of Watsonville; 1st, J. D. Copeland, Watsonville; 2d, Sebastopol Gravenstein Apple Show Association. Belleflower: \$50 cash,

given by the Bank of Watsonville; 1st, J. D. Hardy, Aromas; 2d, S. J. Duckworth, Watsonville. Winesap: 1st, Lettunich Bros., Watsonville; 2d, M. W. Quick, Watsonville. Kansas Beauties: C. E. Beebe, Woodland. Jonathan: 1st, Sebastopol Gravenstein Apple Show Association; 2d, C. L. Robertson, Santa Cruz. White Winter Pearmain: 1st, S. J. Duckworth, Watsonville; 2d, Geo. F. Gallagher, Agnew. Hoover: Sebastopol Gravenstein Apple Show Association. Baldwin: 25 pounds arsenate of zinc, given by California Spray Chemical Co.; 1st, Mitchell-Goodall, Santa Cruz; 2d, Sebastopol Gravenstein Apple Show Association. Gravenstein: Sebastopol Gravenstein Apple Show Association. Spitzenberg: 1st, California Fruit Packing Co. (packers) and A. L. Bailhache, Watsonville; 2d, Sebastopol Gravenstein Apple Show Association. Langford Seedling: 25 pounds Rex arsenate of lead, by the Rex Spray Co., Benicia; 1st, Mitchell-Goodall, Santa Cruz; 2d, Frank Radovan, Watsonville. Winter Banana: Mitchell-Goodall, Santa Cruz. Smith Cider: M. W. Quick, Watsonville. Red Pearmain: 1st, A. A. Scurich & Co., Watsonville; 2d, Mitchell-Goodall, Santa Cruz. Rome Beauty: 1st, R. E. Sherman, Placerville; 2d, Sebastopol Gravenstein Apple Show Association. Wagner: Sebastopol Graven-

stein Apple Show Association. Ben Davis: J. E. Hassler, Placerville. Missouri Pippin: M. N. Lettunich & Co., Watsonville. Arkansas Black: Sebastopol Gravenstein Apple Show Association. Mixed Varieties: Silver trophy, by Adriatic Publishing Co., of San Francisco, publishers of "Jadran"; one barrel Ortho lime sulphur solution, by California Spray Chemical Co., of Watsonville; 1st, Sebastopol Gravenstein Apple Show Association; 2d, Ira J. Phillips, Watsonville.

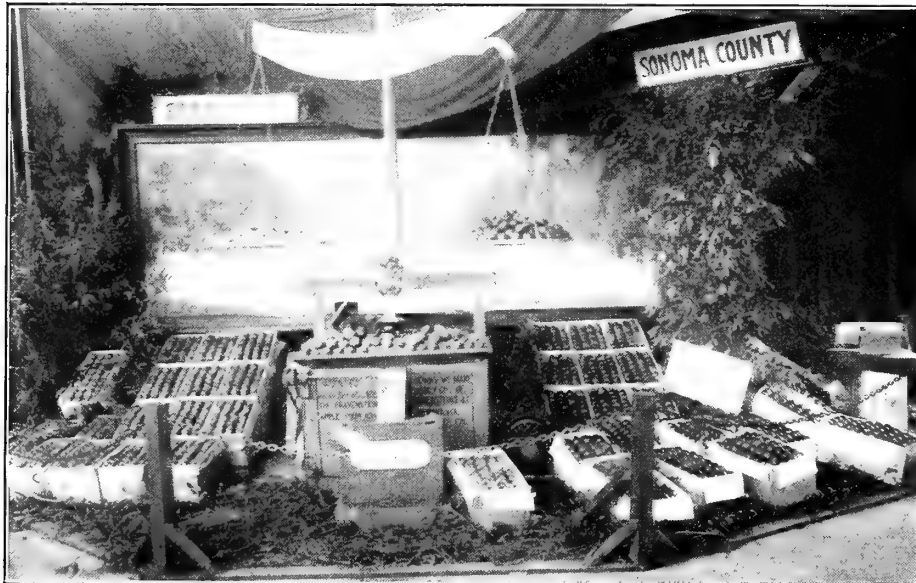
Additional Awards.—Best 10 boxes each variety, gold medal; best 10 boxes exhibit sweepstakes, one gold medal; second best 10 boxes each variety, silver medal; to each winner of first and second prize in this class, one year's subscription to *Fruit Belt* and *Pacific Coast Packer*; to winner (sweepstakes), one year's subscription to *Better Fruit*; for the best exhibit of apples from any county more than 100 miles from Watsonville, \$25 cash, Sebastopol Gravenstein Apple Show Association; for the best 10 boxes red apples from any district outside of Santa Cruz and Monterey Counties, \$10 cash, awarded to R. E. Sherman, Placerville; for best 10 boxes exhibited (sweepstakes), silver trophy, given by the lawyers of Watsonville, awarded to Sebastopol Gravenstein Apple Show Association.

Best feature exhibit by a grower—Five gallons Nicotine Cresol Soap, by California Spray Chemical Co., of Watsonville, Cal.; 1st, W. J. McGowan; 2d, Chas. Husbeck.

Feature Exhibits—1st, Kiss of the Oceans, San Monte Fruit Co., \$100; 2d, Ship Pajaro, Japanese Association, \$75; 3d, Watsonville High School, \$50; 4th, American Flag, MacDonald & Sons, \$25; fifth, Dutch Windmill, Loma Fruit Company, \$15; 6th, Eagle, Fraternal Order of Eagles, Watsonville Aerie No. 72, \$10.

Box-making Contest—First prize, gold watch; second prize, silver watch, given by Pierson Cement Coated Nail Co., San Francisco; 1st, H. C. Poor, Watsonville, score 3359; 2d, F. J. Cousins, Watsonville, score 3011.

Packing Contest—Men: First prize, gold watch; second prize, silver watch, given by Zellerbach Paper Co., of San Francisco, Cal.; 1st, Mike Lazarovich; 2d, A. E. Melcalf. Women: First prize, gold watch; second prize, gold watch, given by Pioneer Roll Paper Co., of Los Angeles, Cal.; 1st, Miss Alma Bradley; 2d, Miss Ida Stoffers.



Engraved by The American Engraving Company, Spokane

#### THE TRANSFORMER

Feature exhibit by Sebastopol Gravenstein Apple Show Association., Apple Annual Watsonville, California, 1910

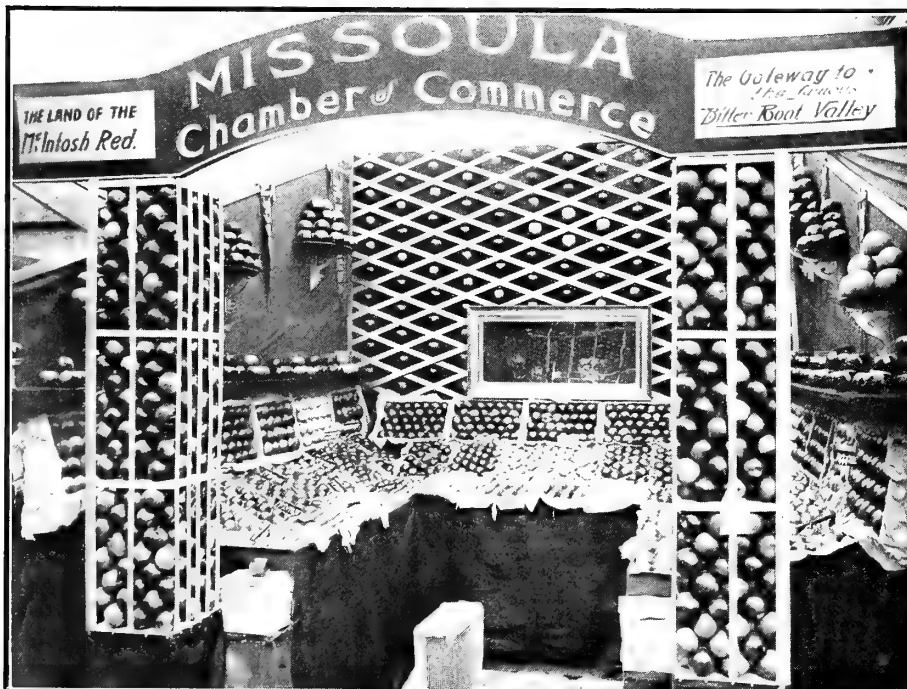


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

MISSOULA, MONTANA, CHAMBER OF COMMERCE DISTRICT DISPLAY, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Engraved by Hicks-Chatten Co., Portland, Oregon

#### \$195 SILVER TROPHY

Given by Charles Ford & Co., Watsonville, California, for the best five boxes of apples exhibited. Won by F. C. Price, Palo Alto, California; also winner of first prize on best five boxes of Bellflowers. Apple Annual, Watsonville, California, 1910.

#### Editor Better Fruit:

Will you be good enough to announce in the next issue of "Better Fruit" that the Society for Horticultural Science will hold its next annual meeting at Tampa, Florida, on February 9, 1911, the day preceding the meeting of the American Pomological Society, which convenes there February 10 and 11, 1911? Thanking you for the kindness, I am, very truly yours, C. P. Close, College Park, Maryland.





## Statement of Fact

**H**OOD RIVER for ten years has claimed to grow the **highest quality of Newtowns and Spitzenbergs**, to pack them better and to guarantee the pack. As proof of this statement we submit the following evidence: For **ten consecutive years Hood River has sold Spitzenbergs and Newtowns at higher prices than have been obtained by any other district** for these or any other varieties in commercial quantities. Hood River has **never competed** in carload contests in National Apple Shows, although we have won thousands of cups, trophies, medals and cash prizes at various exhibitions throughout the United States. Hood River won the only Grand Prize at the St. Louis Exposition given any single county in the United States on green

fruit. Hood River was compelled to enter the National Apple Show at Spokane this year because other districts were saying we were afraid to enter, and we dare not. We entered a car of Spitzenbergs which won the sweepstakes prize of \$1,000 in cash for the best car exhibited. We won \$250 cash prize for the best car of Newtowns exhibited. We won \$250 cash prize for the best carload of Spitzenbergs exhibited—this in

competition with twenty-two cars from the Northwest. The Spitzenberg car scored **997 out of a possible thousand**. The Newtown car scored **988** in a possible 990. The winning car last year scored **928** in a possible **1,000**. In addition, Hood River won the \$500 solid silver trophy cup given by the Chicago

Chamber of Commerce, composed of sixty-two affiliated bodies, for the **best packed car** of apples exhibited at the Third National Apple Show at Spokane, which was also exhibited at Chicago.

Hood River's claims for ten years have been proven in a substantially convincing way. There is a booklet (a quality booklet) telling the why and how of Hood River that is yours for a 4-cent stamp, by addressing the secretary

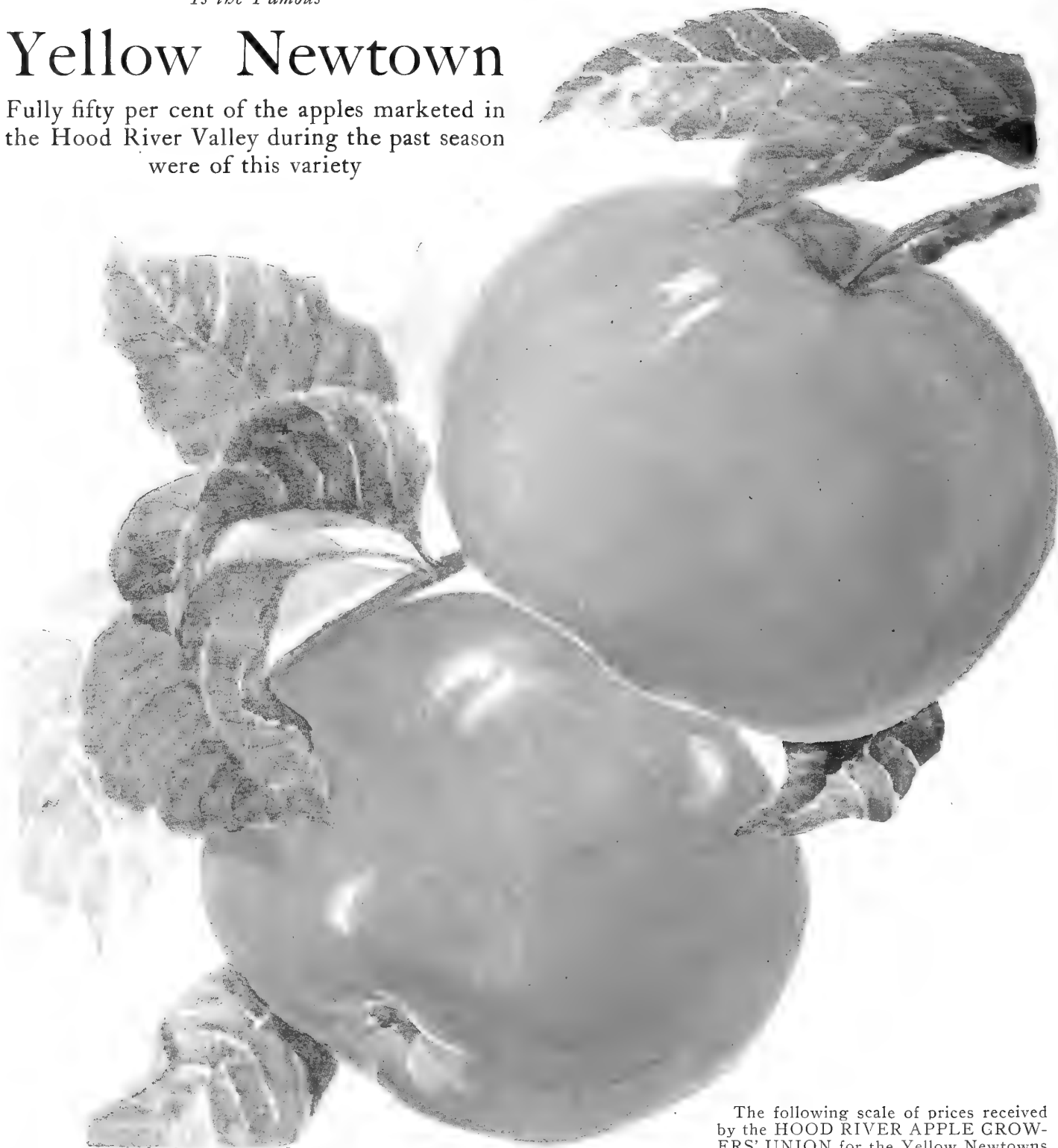
**HOOD RIVER COMMERCIAL CLUB, HOOD RIVER, OREGON**

THE APPLE PICTURED ON THIS PAGE

*Is the Famous*

## Yellow Newtown

Fully fifty per cent of the apples marketed in the Hood River Valley during the past season were of this variety



**B**ECAUSE of its extraordinary keeping quality and delicious flavor and European demand, over three-fourths of the Yellow Newtown output has been exported annually; as a result it is not well known to the trade in this country.

Because of climatic conditions the famous HOOD RIVER VALLEY has proven to be the natural home for the perfect Yellow Newtown. In the coast

sections, where there is a great deal of moisture, it has a tendency to take on fungus, while in higher altitudes it does not do as well.

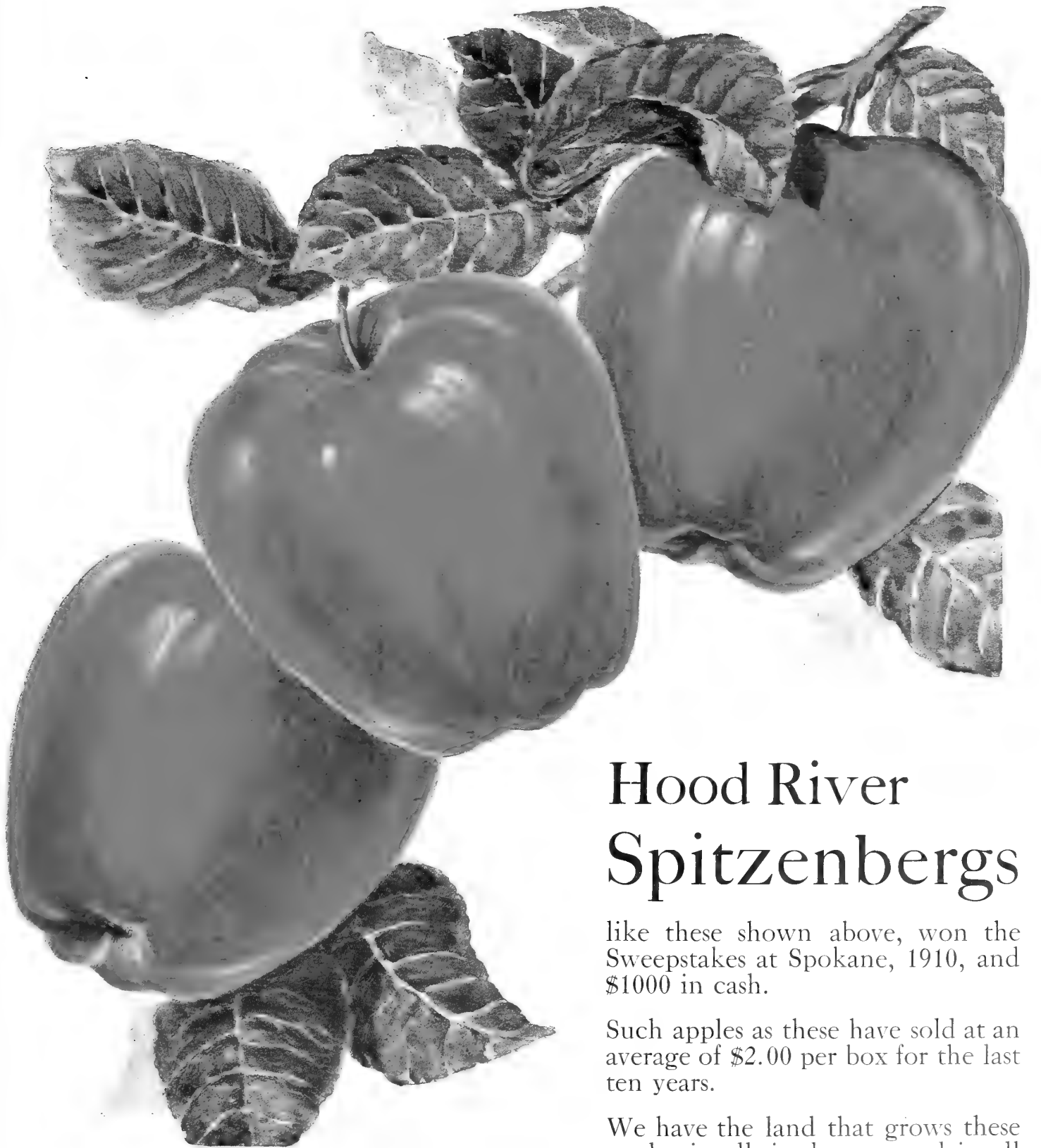
A carload of these famous apples from the Eggermont Orchard of Hood River, shown at the National Apple Show at Spokane this year, scored, considering the pomological rating, the highest number of points ever scored by any apples at any time at any place.

The following scale of prices received by the HOOD RIVER APPLE GROWERS' UNION for the Yellow Newtowns indicate the high rank of this apple in the commercial world.

1903, \$1.75 Per Box	1907, \$2.25 Per Box
1904, \$1.85 Per Box	1908, \$2.25 Per Box
1905, \$2.00 Per Box	1909, \$2.40 Per Box
1906, \$2.20 Per Box	1910, \$2.00 Per Box

The tree itself grows more symmetrical and cares for itself much better than any other variety, is a heavy bearer, and the Newtown apple is nearest immune from the codlin moth.

For Choice Hood River Valley Orchard Land, See Devlin & Firebaugh's Advertisement, page 22



## Hood River Spitzenbergs

like these shown above, won the Sweepstakes at Spokane, 1910, and \$1000 in cash.

Such apples as these have sold at an average of \$2.00 per box for the last ten years.

We have the land that grows these apples in all sized tracts and in all stages of cultivation.

COMMUNICATE WITH US

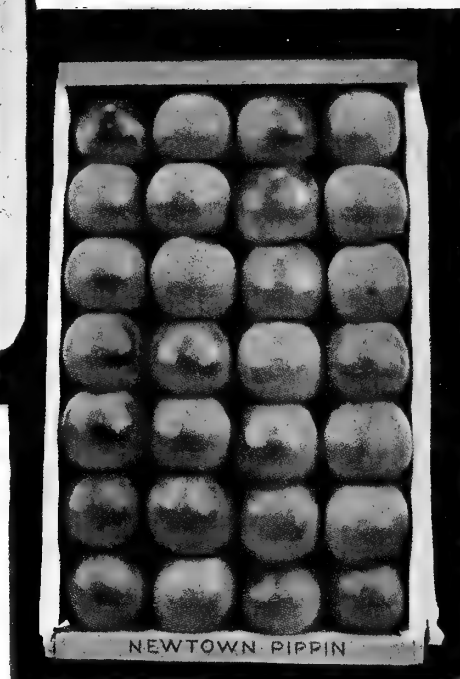
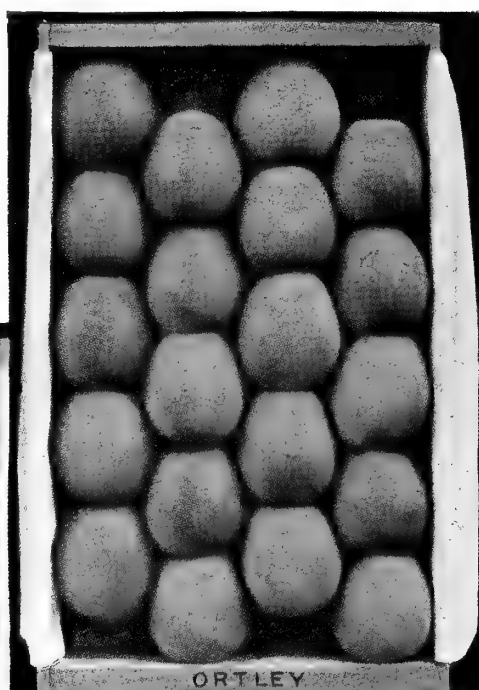
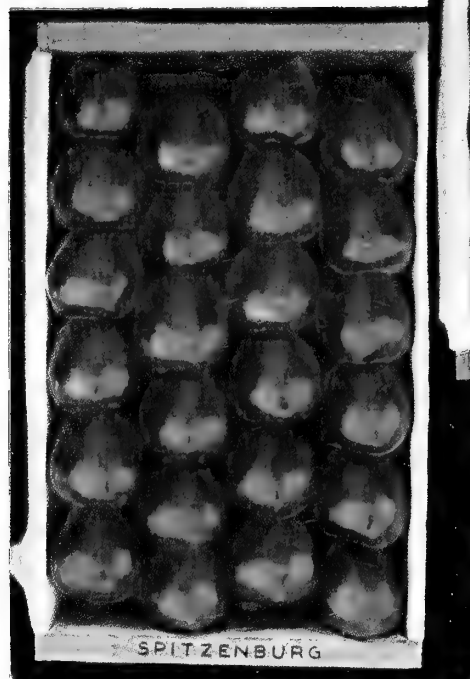
# *The* Hood River District Land Co.

HOOD RIVER, OREGON

"Within the Shadow of  
Mighty Mount Hood"

"Where  
the rain and sunshine  
meet"

There grow the finest  
and  
most delicious apples  
in all the wide,  
wide world



HOOD RIVER  
FAMOUS  
COMMERCIAL  
PACK

# HOOD RIVER

"THE MODERN GARDEN OF THE HESPERIDES"

Every apple picked by hand and packed in the most scientific manner under the direct and personal inspection of the Board of Directors of the

## HOOD RIVER APPLE GROWERS' UNION

We take pleasure in advising the trade that for the third consecutive time practically the entire crop of this noted valley has been purchased by us.

The early fall varieties are now rolling and will be succeeded within a week or two by the noble NEWTOWN PIPPIN, the delicious SPITZENBERG, the magnificent GOLDEN ORTLEY and such other varieties as grow to perfection only in the Hood River Valley.

## Steinhardt & Kelly, New York

The Most Extensive Operators in High Class Fruits in the World

### NATIONAL APPLE SHOW PRIZES

Hood River won the Sweepstakes Prize at Spokane, \$1,000 in cash, for the best carload of apples, exhibited by C. H. Sproat, manager of the Hood River Apple Growers' Union, grower and exhibitor; scored 99 $\frac{9}{10}$ . Hood River won the cash prize, \$250, for the best carload of Newtowns; scored 98 $\frac{9}{10}$ ; exhibited by Avery Bros., Hood River. Hood River won the cash prize, \$250, for the best carload of Spitzenbergs, exhibited by C. H. Sproat; scored 97 $\frac{9}{10}$ . Hood River won the Sweepstakes \$500 solid silver trophy cup, given by the Chamber of Commerce, Chicago, 62 affiliated bodies, for the best carload of apples exhibited, under the auspices of the National Apple Show, Spokane. This car was exhibited at Chicago. These prizes were won by members of the Hood River Apple Growers' Association, and the apples are being handled by Steinhardt & Kelly.



# GRAVENSTEIN SHOW, SEBASTOPOL, CALIFORNIA

FROM THE SEBASTOPOL TIMES

THE greatest thing ever—an exhibit such as has never before been seen in California. These few words describe, in brief measure, the big Gravenstein Apple Show of 1910. In extent, beauty and all other points the apple show was far beyond the expectations of our own people and all visitors. Every one was so amazed that none can find words to fully describe the show. The canvas pavilion, which is eighty feet wide and two hundred and twenty feet in length, was filled with exhibits of rare beauty. If the pavilion were twice as large it might have accommodated all of the apples and other products that the people of this section wanted to exhibit. Thousands of boxes of high grade fruit and many beautiful feature exhibits had to be refused space owing to lack of room. The people of Anoly Township never before realized their wealth and strength.

The attendance at the big show every afternoon and evening has been miles beyond what the promoters expected. From San Francisco to Willits, from the Sacramento and the San Joaquin Valleys and from all other parts of the state people have come to take in the show. Yesterday a delegation of Watsonville people arrived in town, and while Watsonville is recognized as one of the greatest apple-producing sections of the West, the visitors tip their hats to Sebastopol and say: "We really didn't think you could do it."

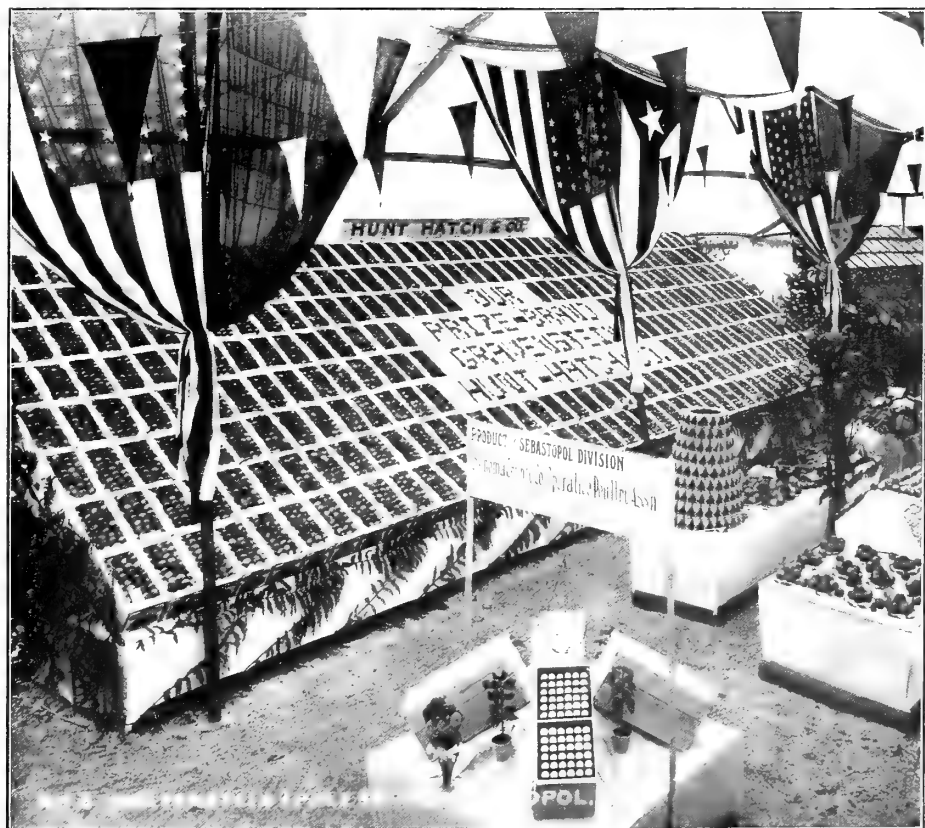
Governor James N. Gillett came all the way from Sacramento Wednesday evening to open the apple show. His Excellency was met at Santa Rosa by a delegation of directors of the apple show and escorted to the Hotel Overton, where a light repast was partaken of. The party then drove to Sebastopol in automobiles and the band and citizens welcomed the Chief Executive most cordially. Thirty minutes later Mayor J. P. Kelly called the meeting to order in a brief but appropriate speech. Mr. Kelly introduced J. P. McDonald, president of the Gravenstein Apple Show Association, who in turn introduced the Governor, who was received with a burst of applause. Governor Gillett expressed his admiration of the excellence of the exhibits and warmly congratulated Sebastopol and the surrounding country and Sonoma County in general upon the enterprise and progressive spirit of our people. He said that he had long known of the great commercial value of the Gravenstein apples, but he never thought that fruit of any kind could be arranged so artistically. The Governor was frequently interrupted by applause, and he closed his speech by saying that he hoped to be present at the opening of our apple show next year.

Director General Edward H. Brown was next introduced and he spoke briefly, warmly praising the people of this section for the splendid assistance they had given him in his work. Mr. Brown has won a warm place in the hearts of the



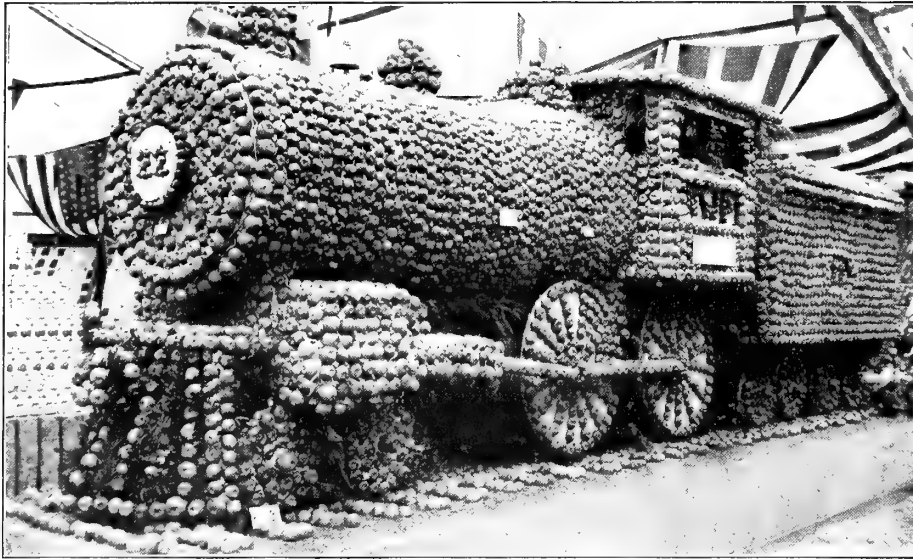
Engraved by Hicks-Chatten Co., Portland, Oregon

ONE OF THE FEATURE DISPLAYS AT THE GRAVENSTEIN APPLE SHOW  
SEBASTOPOL, CALIFORNIA, 1910

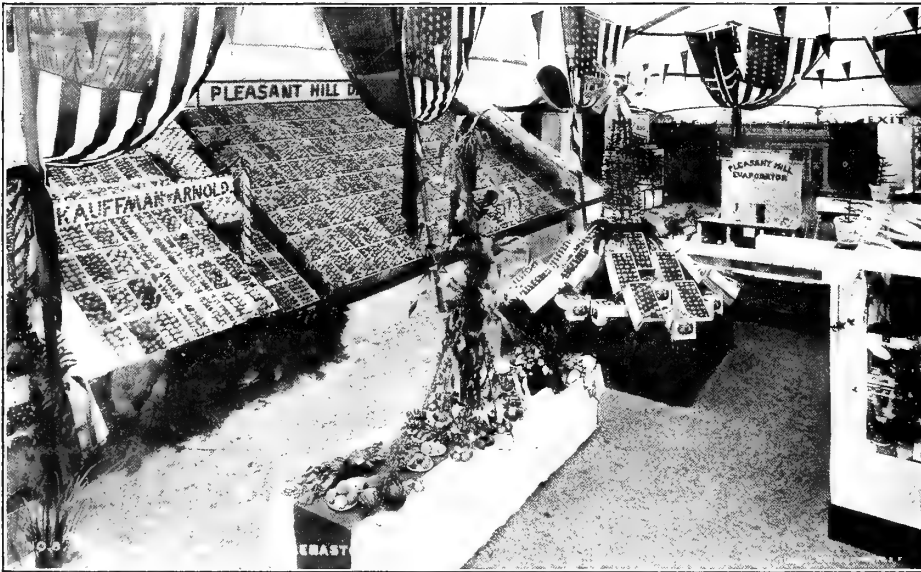


Engraved by Hicks-Chatten Co., Portland, Oregon

EXHIBIT BY HUNT-HATCH COMPANY AT THE GRAVENSTEIN APPLE SHOW  
SEBASTOPOL, CALIFORNIA, 1910



LOCOMOTIVE COVERED ENTIRELY WITH APPLES  
One of the feature exhibits at the Gravenstein Apple Show, Sebastopol, California, 1910



A CORNER OF FRUIT EXHIBITS AT THE GRAVENSTEIN APPLE SHOW  
SEBASTOPOL, CALIFORNIA, 1910

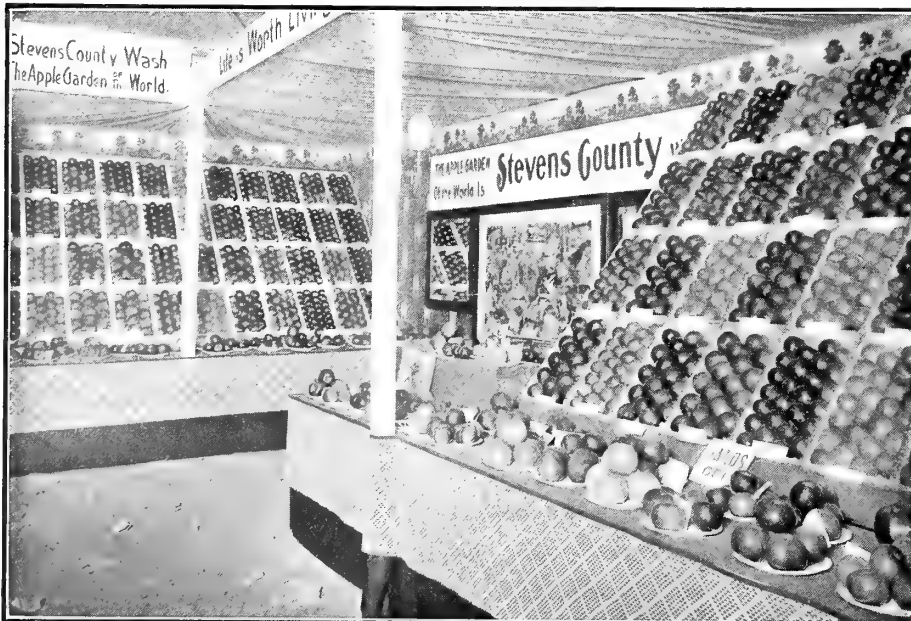


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

STEVENS COUNTY, WASHINGTON, DISTRICT DISPLAY AT THE NATIONAL APPLE SHOW  
SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910

people of this section by his uniform courtesy, tirelessness, patience and superior ability.

After Governor Gillett had been given an opportunity to view the exhibits he was entertained at supper at the Hotel Martinique, of which H. Hampshire is proprietor. The spread was a most elaborate one and the service excellent.

The outside of the pavilion was decorated with flags and powerful electric lights and presented a trim appearance.

Within the pavilion was such a superb sight as does the heart good to see. Here was a solid display, ranging far around on either side, of beautiful Gravensteins, rosy, sunny, polished, dressed in holiday attire. Thousands on thousands of boxes of Gravensteins, arranged in pleasing and striking designs and giving an aroma that was indeed delightful.

The entire floor space was filled with splendid features, every one of which represented many days of hard and devoted work on the part of intelligent and unselfish men and women. There were such noteworthy structures as the noble models of the county courthouse, engine No. 22, the First National Bank, the Forestville schoolhouse, the Pleasant Hill Evaporator, the Stony Point Growers Association's packing-house, the Graton Depot. Then the charming features, emblematic and ornamental, and the many tables richly filled with all good things that grow. For genuine, substantial beauty, for satisfying and delicious odors, nothing can compete with the contents of the apple show pavilion. And the best of it is that not a single thing displayed came from anywhere but the prolific soil of imperial Sonoma. There were no importations; all was home-grown and home-made. It is, in fact, a generous offering of our own superabundance.

Selfishness was noticeably absent among the exhibitors. While toiling at close quarters for several days the utmost geniality and good-fellowship prevailed. Old friends and new, when they could find a moment, visited one another's displays and sincerely and eagerly admired and praised, and gladly lent a hand when needed. Joy in the working was the universal feeling.

The Committee of Judges of Exhibits of the Sebastopol Apple Show, having finished the task allotted them, reported to the management as follows:

"Owing to the great excellence of the entire exhibit, your committee has had some difficulty in making the awards. We were impressed by the great amount of painstaking labor, skill and ingenuity displayed in getting up these exhibits. Considering the facts this committee has come to the conclusion that the only way to properly distribute the awards is to increase the number of prizes, and in addition make honorable mention of numerous exhibits.

The committee wishes to further state that the Sebastopol Apple Show demonstrates most remarkable possibilities for the apple industry of Sonoma County."

The following are a few of the leading prize-winners:

Apples—Packers' Entry: Gargia & Maggini, 1st prize; Earl Fruit Co., 2d prize; Hunt, Hatch & Co., 3d prize. Growers' Entry: Ida S. Hunt, 1st prize; Vine Hill, 2d prize; Mrs. Cadwell, 3d prize. Feature Exhibit—Huntley and Morse, 1st prize; Pleasant Hill, 2d prize; W. H. Baker, 3d prize.

Best Exhibit Seven Varieties in Regulation Box—J. W. Turner, 1st prize; Mrs. Barlow, 2d prize; Kauffman & Arnold, 3d prize.

Best Exhibit Five Varieties in Regulation Box—Forestville, 1st prize; Pleasant Hill, 2d prize; J. W. Turner, 3d prize.

Best Exhibit Three Varieties—W. N. Couch, 1st prize; J. W. Turner, 2d prize; Mrs. Barlow, 3d prize.

Best Arranged Boxes, Not Less Than 10 Boxes—W. H. Baker, 1st prize; A. E. Scammon, 2d prize; Y. Fugii, 3d prize.

Best Display of Apples in Plates—Ida S. Hunt, 1st prize; Mrs. Turner, 2d prize; Mrs. N. Briggs, 3d prize.

Best Apple Exhibit From One Tree—H. R. Harbine, 1st prize.

Best Exhibit of Apples in Baskets—Ida S. Hunt, 1st prize.

Best Exhibit From One District—Stony Point, 1st prize; Vine Hill, 2d prize; Forestville, 3d prize.

Special Prize by California Spray Chemical Company—H. Elphick, 1st prize; D. D. Sinclair, 2d prize; John Willey, 3d prize.

A special cup prize by Sherwin-Williams Arsenate of Lead Co. was won by Mrs. Ida S. Hunt.

Kauffman & Arnold's display of seven varieties of matured apples was much admired and won merited praise.

The Anally Bank was awarded second feature exhibit prize, \$75 in cash, and the Frist National Bank fourth feature prize, \$25 in cash. Both banks withdrew in favor of the other exhibitors.



**T**HE First Annual Apple Show of Eugene was held in October. The interest taken by growers both near and far speaks volumes for the industry in this section. There were many beautiful displays. The following exhibitors won prizes:

J. Beebe, five boxes, \$50 gold watch.

F. L. Waite, three boxes, \$25 in cash.

J. Beebe, two boxes of Spitzenbergs, \$15 in cash.

J. Beebe, two boxes Yellow Newtowns, \$10 in cash.

H. F. Hollenbach, two boxes Baldwins, \$10 in cash.

Harry Bower, two boxes Spitzenbergs, \$10 in cash.

B. F. Wheeler, one box Jonathans, \$5 in cash.

B. F. Wheeler, one box Red Cheek Pippins, \$5 in cash.

H. F. McCormick, one box Rhode Island Greenings, \$5 in cash.

H. E. Wylie, one box Northern Spies, \$5 in cash.

George T. Ray, one box Kings, \$5 in cash.

H. F. McCormick, Winter Nellis pears, *Daily*

and *Twice-a-Week Register* one year.



*Editor Better Fruit.*

Your journal is a very clean-cut, effectively gotten up publication, and I will be pleased to have it before me in my work down here in a kindred field of labor.—Yours very truly, A. S. Leecraft.



*Editor Better Fruit.*

That some editors have been too guarded in advising their subscribers to discount the claims of all new introductions at least 100% the enclosed copy will verify.

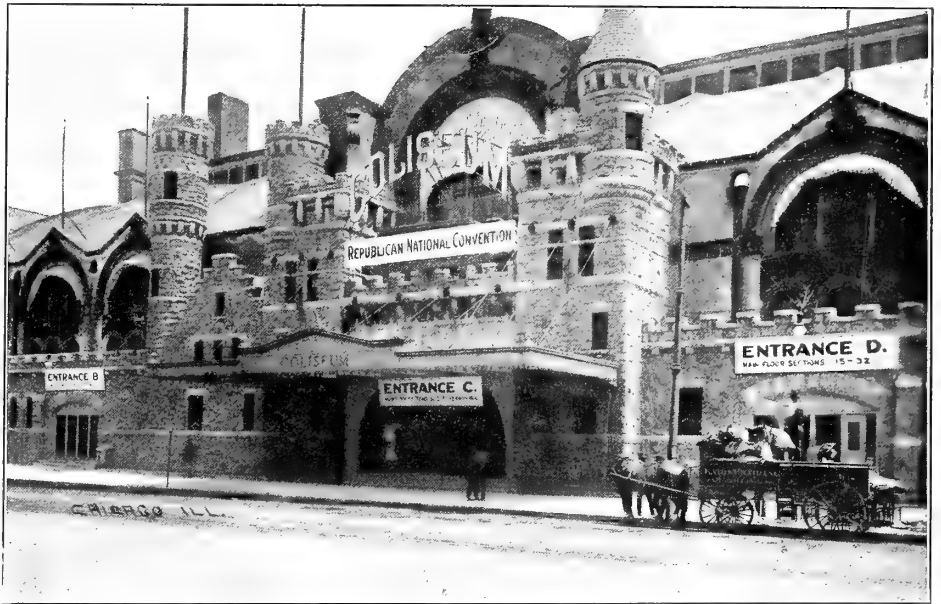
Dried berries of the fig type variety of strawberries were used for manufacture by J. D. Hilton, and sold to the trade, as strawberry confection or fruit candy. Samples sent out by myself to get expressions of opinions brought out replies in part like the enclosed copy. Aside from their preservative nature, in their fresh ripe state, they are fine. Although it will be hard for the old strawberry growers and originators to accept the claim at once, it will have to be accepted. That the fig types will become popular in their fresh state goes without saying.

I am not seeking free advertising, nor do I claim my twenty-one years of experimental work breeding the strawberry to a higher standard, and the placing of the strawberry in the list of evaporated fruits entitle me to prominence or a free mention in your journal. That there will be some inquiries as to the facts of this claim in strawberries, you will now have evidence of facts.—I am, Yours truly, H. J. Schild, Ionia, Michigan.

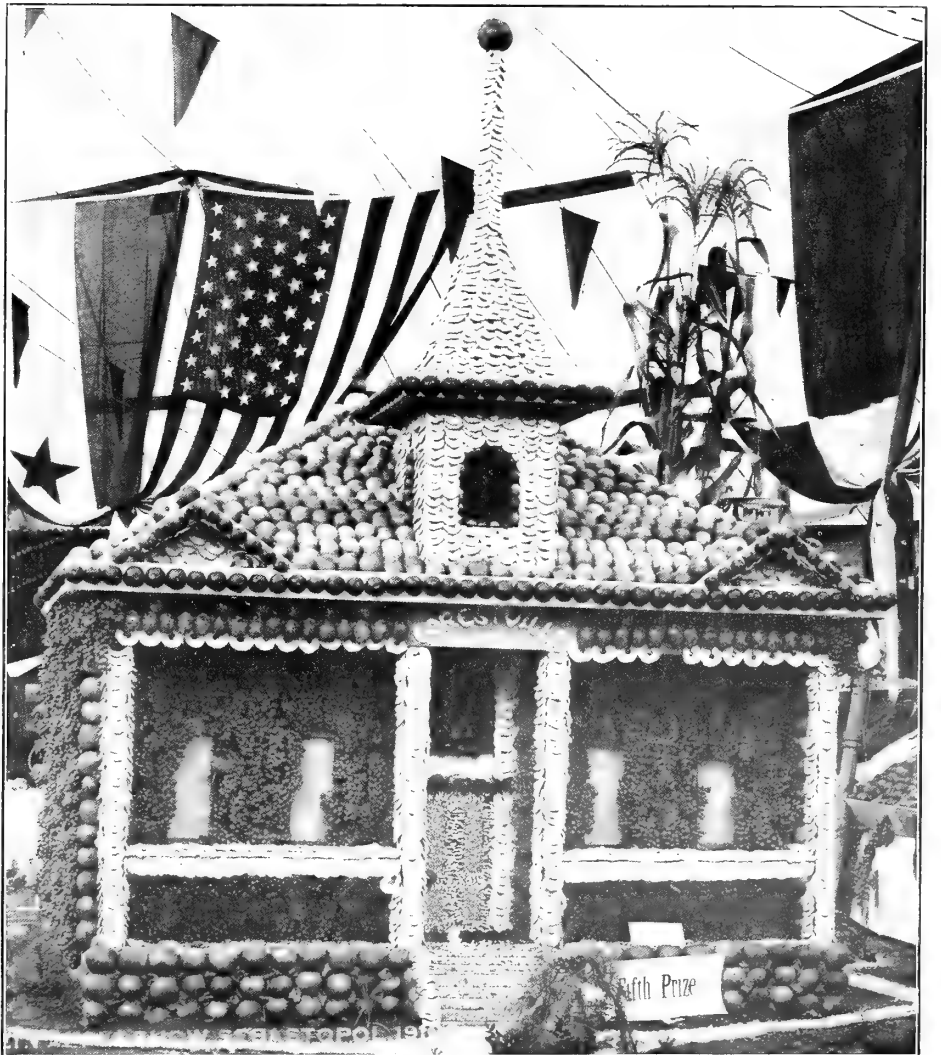
Mr. H. J. Schild, Ionia, Michigan:—Your letter with samples of your dried strawberries and strawberry confection is at hand, and I am more than pleased with the way they show up. The strawberries were evidently preserved by drying only, and were in such a condition that they could be

kept indefinitely. They absorbed water, however, and soon swelled to about the size of the small Warfield berry. The berries had a very noticeable fig flavor, and the texture and taste did not seem unlike that of figs. Judging from the texture of these fruits, it is quite evident that the fresh fruit

itself would be excellent for shipping, and would have a very sweet, pleasant flavor, so that it would be excellent also for use either in a fresh state or when canned or preserved.—Yours very truly, L. H. Taft, State Inspector of Nurseries and Orchards, East Lansing, Michigan.



Engraved by Hicks-Chatten Co., Portland, Oregon  
EXTERIOR VIEW COLISEUM BUILDING, CHICAGO, ILLINOIS, WHERE THE UNITED STATES LAND AND IRRIGATION EXPOSITION WAS HELD THIS YEAR



Engraved by Hicks-Chatten Co., Portland, Oregon  
ANOTHER OF THE FEATURE EXHIBITS AT THE GRAVENSTEIN APPLE SHOW SEBASTOPOL, CALIFORNIA, 1910



## THE FOURTH ANNUAL ALBANY APPLE FAIR

**T**HE first prize of a \$100 silver cup for the best county exhibit at the Fourth Annual Albany Apple Fair, was won by Lane County. This makes the second consecutive year in which Lane has won this cup, offered annually for the best exhibit of at least 20 boxes of five or more varieties from any county in the Willamette Valley except Linn, the home county of the fair being barred from competing for this prize.

Brownsville won the \$50 cash prize for the best Linn County community exhibit of 10 boxes of three or more varieties. There were six entries for this prize and the competition was spirited. The second

prize went to Santiam and the third to Oakville.

The judges were: H. C. Atwell, of Salem, president of the State Horticultural Society; E. C. Roberts, of Lebanon, ex-county fruit inspector of Linn County, and E. C. Armstrong, of Salem, county fruit inspector of Marion County. The awards were as follows:

Best Five Boxes of Three Varieties—1st prize, Henry Bushnell, of Junction City; 2d, Henry Struckmeier, of Thomas; 3d, F. L. Waite, of Eugene.

Best Box of Yellow Newtown Pippins—J. Beebe, of Eugene.

Best Box of Spitzenbergs—1st, C. C. Cate, of Brownsville; 2d, F. L. Waite, of Eugene.

Best Box of Kings—1st, Mrs. Harold Rumbaugh, of Albany; 2d, H. G. Rumbaugh, of Albany.

Best Box of Baldwins—1st, S. P. Williamson, of Oakville; 2d, H. G. Rumbaugh, of Albany.

Best Box of Red Cheek Pippins—1st, S. P. Williamson, of Oakville; 2d, Frank Holman, of Albany.

Best Box of Ben Davis—1st, J. Beebe, of Eugene; 2d, H. G. Rumbaugh, of Albany.

Best Box of Grimes Golden—Henry Struckmeier, of Thomas.

Best Box of Jonathans—John Goetz, of Albany.

Best Box of Wageners—1st, H. G. Rumbaugh, of Albany; 2d, Mrs. Harold Rumbaugh, of Albany.

Best Box of Starks—A. W. Martin, of Albany.

Best Box of Mammoth Black Twigs—H. G. Rumbaugh, of Albany.

Best Box of Ganos—John Smith, of Albany.

Best Box of Northern Spy—1st, H. G. Rumbaugh, of Albany; 2d, S. P. Williamson, of Oakville.

Best Box of Rome Beauty—John Goetz, of Albany.

Best Commercial Packed Box—1st, H. G. Rumbaugh, of Albany; 2d, H. C. Bushnell, of Junction City.

Best Display on Plate, 10 or More Varieties—1st, C. C. Cate, of Brownsville; 2d, J. Slider, of Albany.

Best Five Boxes, Not Less Than Three Varieties, Grown and Packed by Exhibitor—H. G. Rumbaugh, of Albany.

Best Three Boxes, Three Varieties, Grown and Packed by Exhibitor—Frank Holman, of Albany.

Best Commercially Packed Three Boxes, Three Varieties, Grown by a Member of the Albany Applegrowers' Association—Frank Holman, of Albany.

Best Pyramid Display of Baldwins—1st, W. L. Grove, of Tangent; 2d, Henry Struckmeier, of Thomas.

Best Pyramid Display of Kings—1st, H. G. Rumbaugh, of Albany; 2d, W. L. Grove, of Tangent.

Best Pyramid Display of Spitzenbergs—1st, H. G. Rumbaugh, of Albany; 2d, John Durham, of Lebanon.

Best Pyramid Display of Red Cheek Pippins—1st, S. P. Williamson, of Oakville; 2d, Frank Holman, of Albany.

Best Collections of 50 Apples, One or More Varieties, Arranged in Pyramid Shape—1st, A. W. Martin, of Albany; 2d, H. G. Rumbaugh, of Albany.

Largest Apple at the Fair—A. W. Martin, of Albany.

◆ ◆ ◆

**ALMANAC AND ENCYCLOPEDIA.**—In almanacs fashions have changed. Directions for planting in favorable phases of the moon no longer have place; and even jokes and homely, pithy saws, such as Poor Richard was wont to deliver, have passed into the great beyond of printers' ink. Within the last few years the arm of progress has swept tradition aside and produced an almanac in accord with the times. Containing not only all practical, scientific information regarding the changes of season and the movement of astronomical bodies, the modern almanac goes further and makes itself each year a purveyor of the latest gospel of agriculture by giving strong, striking signed articles from the great authorities of agriculture. Of such a nature is the handsome 100-page almanac recently issued by the International Harvester Company of America, with general offices in Chicago, Illinois. In usefulness it has not been surpassed by its authoritative utterances. The feature articles in the new almanac are by Frank P. Holland, president Texas Farm and Ranch Publishing Co., who writes on "Trees Worth Growing;" Professor P. G. Holden of the Iowa College of Agriculture, who writes on "Corn;" W. D. Hoard, editor of Hoard's Dairyman, who tells about "Up-to-Date Dairying," and Henry Wallace, editor of Wallace's Farmer, who advises on "Sanitation in the Country;" "Building Suggestions," by J. E. Wing; "Farm Power," by Professor E. C. Lucke of Columbia University; "Farm Machines and Progress," together with maps showing the number of machines in use and the production of wheat by decades from 1840 to 1900. The articles are accompanied with photographs of the writers, and are powerful and full of pith. Many other subjects are interestingly treated in this book. Ask the company for a copy of this very valuable book.

◆ ◆ ◆

### Editor Better Fruit:

Let us express the kindest regards and best wishes for the birthday that you were celebrating on December 24th. We hope there will be many happy returns, likewise that the coming year will be even a more prosperous one, not only for you personally, but for "Better Fruit," than ever before in its history. It is a certainty that the publication is the very best magazine of the kind extant, and we know that that is due entirely to the close and careful attention you have been giving to it since the day of its inception.—Yours very truly, Produce Reporter Company, Chicago.

◆ ◆ ◆

### Editor Better Fruit:

We have received a great many congratulations about the special edition of "Better Fruit" on the subject of orchard heating. We could use a few more copies of this paper if you could spare them.—Yours very truly, The Ideal Orchard Heating Company.



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

AVENUE OF PRIZE WINNING CARLOADS OF JONATHANS AND MIXED VARIETIES Exhibited by Richey & Gilbert Company, North Yakima, Washington, at National Apple Show, Spokane, Washington, November, 1910. Further back in the picture is the first prize winning carload of Winesaps, of which we were unable to secure pictures.

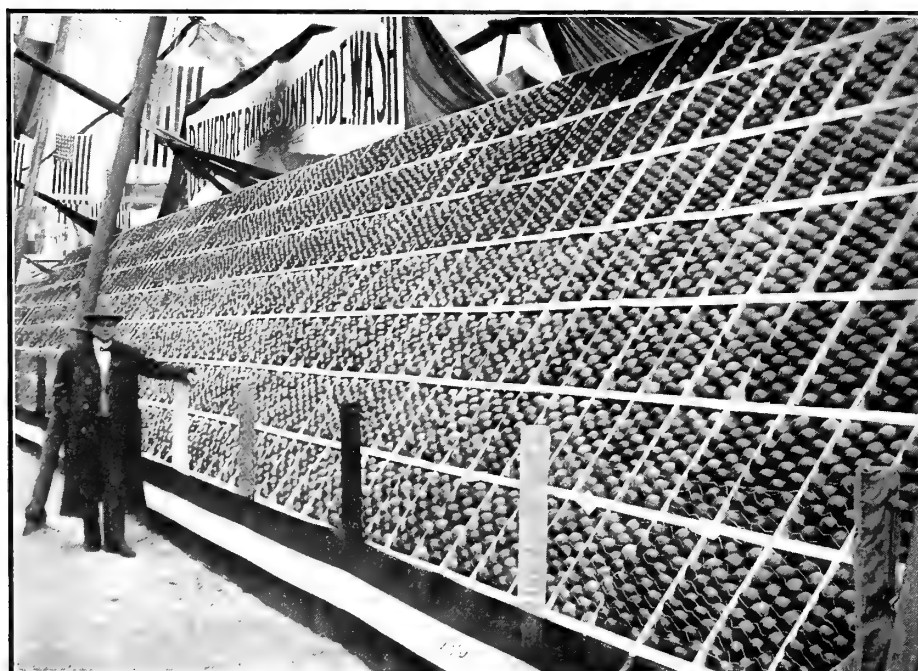


Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

MIXED CARLOADS OF APPLES FROM SUNNYSIDE, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910





C. C. CHAPMAN  
Secretary Oregon Development League, Portland, Oregon  
Manager Promotion Committee Portland Commercial Club

**RED GRAVENSTEIN APPLE.**—In an orchard of ten acres, at Olga, Orcas Island, San Juan County, Washington, are 50 Gravenstein trees, which have been bearing about ten years. On one of the trees, starting from the main trunk and about three feet from the ground, is a limb which from the time the tree commenced to bear, has produced these beautiful apples. This is called by horticulturists a sport, and is of very rare occurrence. We call the apple the Red Gravenstein because it has the Gravenstein flavor, the Gravenstein shape, the Gravenstein core and ripens at the same time. In fact it is a Gravenstein in every way except color. We have top-worked 68 trees to this apple, 16 of which are bearing, and from which these apples come. We are also propagating the trees for sale, and expect to have forty to fifty thousand for fall of 1911 and spring of 1912 delivery. We claim it to be a better commercial apple than the common Gravenstein because it is a better bearer, a better keeper, sells for double the price and is surely a handsomer apple. If you are interested and wish any further information, address Van Sant & Whipple, or The Vineland Nurseries Co., Clarkston, Washington.

[Editor's Note.—The editor saw a box of these Red Gravensteins at the National Apple Show at Spokane in November. It had kept well and was in fine condition at this date. The color was a beautiful red, the flavor excellent. The color is much handsomer on this than the ordinary Gravenstein, and it is our impression that the apple is worthy of trial tests by fruit growers. We believe a grower will be justified, if conditions are favorable, in planting a small per cent of this variety, although we always are conservative about recommending any new variety until it is proved out commercially.]

#### Editor Better Fruit:

Enclosed find sum of one dollar (\$1.00) for "Better Fruit" another year. I cannot understand how any orchard man can do without "Better Fruit."

Every detail of orchard work, correct fruit packing and scientific fruit raising is fully illustrated, which is surely a very great help to the industry. Why, I have a year's numbers of "Better Fruit" that I would not part with for any consideration. Having received notice of expiration of my year's subscription, I was fearful lest I should lose one number, but on going to town was agreeably surprised to find my October number in the office.—John Miller, Prescott, Washington.

**L**AND shows are the latest creations in the profession of publicity in the Eastern and Middle West cities. For the purpose of exploiting the Western Land Products Exhibit to be given at Omaha from January 18 to 28, 1911, Fred A. Shank, of Omaha, called upon Secretary C. C. Chapman, of the Portland Commercial Club, yesterday. He explained to the club that space in the Omaha show was reserved by Wyoming, Utah, Idaho and Colorado, and that his visit here is for the purpose of getting the co-operation of Oregon. Space in the auditorium is being offered to the various Coast States for \$2 a square foot. It is proposed that sufficient space be engaged so that exhibitors from Oregon may place displays without the additional burden of paying for floor charges.

To gain this end Mr. Shank suggested that the Commercial Clubs subscribe the necessary money and thus give the exhibitors a chance to show what Oregon can do in products of this state. He further said that the railways had consented to join the enterprise and that prospects for an excellent show were exceedingly bright.

Land shows are on the increase. Chicago will hold one beginning November 28 and lasting a week. Pittsburg has just held one and New York has made plans for holding one in November, 1911. It is predicted that Minneapolis, St. Paul, Columbus, Ohio, Kansas City and St. Louis will soon enter the field, and that land shows will become a regular feature of



JOHN M. WALKER  
Colorado, President of the Western Fruit  
Of the Humphrey Commission Company, Denver,  
Jobbers' Association.

the great commercial centers of the country. The method is to secure attendance from the surrounding country of farmers and of the prospective settlers for the Far West to encourage them in their desire to move to a new country. This is accomplished by lectures, by reading matter and by displays in large auditoriums. Accompanying these displays are numerous articles in the local papers free of cost. At Omaha it is planned to have the Governor of each Western state speak upon the resources and the opportunities of his particular section.—Oregonian.



Photo by Frank Palmer, Spokane

Engraving by American Engraving Company, Spokane

AVENUE OF CARLOADS OF APPLES FROM HOOD RIVER VALLEY, OREGON, AT THIRD NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910

To the left is the first prize carload of Newtown Pippins from the Eggermont Orchard, Avery Brothers, growers. To the right is the sweepstakes carload of Spitzenbergs grown by C. H. Sproat. In the rear will be seen the "Better Fruit" booth.

## GRAFTING AND TOP WORKING OF FRUIT TREES

Continued from December Number

The scions may be stored in sand in a cool corner of the cellar or buried out of doors. The main object is to keep them cool and moist and away from fluctuating temperatures. An excellent plan is to bury them on the north side of a building or in some spot shaded most of the day. They need not be buried deep, from twelve to eighteen inches being sufficient in a well shaded spot.

It would hardly seem wise to leave the subject of top-working old trees without some comment on future treatment of the grafts. The setting of the scions is only the first step in working over the tree. Should we stop here, a most miserable failure, or at least a poor top,

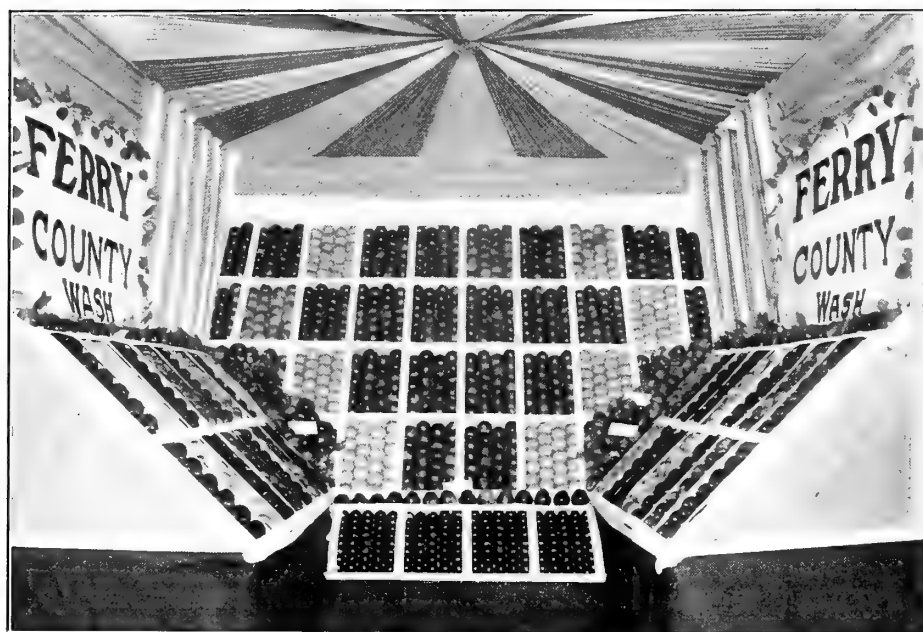
would be the result. Many a good catch is ruined by neglecting the pruning the first two seasons. During the first season the grafts should make a very rank growth, and they will require some pinching back to save them from becoming top-heavy, and consequently easily blown out. The common practice is to head-in the rapidly growing shoots when they have attained a length of from eighteen inches to two feet. This forces branches from below, and if growth becomes too heavy these may need cutting back before the season is over. This pruning insures stockiness of the new growth and throws much of the energies of the top into a good union.

The growth of suckers or watersprouts from the stock should not be allowed to any great extent. Should the stubs be exposed to the direct rays of the sun it is well to leave some of this growth, pinching it back to cause it to form a dense shade. Unless needed for protection it is well to rub the sprouts off as fast as they appear.

The following spring the system of pruning should resemble very much that of pruning young trees. The growth of the grafts should be cut back to usually not over eighteen inches in length. They may be cut even shorter if the growth has not been satisfactory. If all three buds have started from a scion, it is well to remove all but one to avoid crowding. As a rule, the growth from the lower bud will be the strongest, and should be retained. Should the formation of the top allow it, a second growth may be left. If the grafts have been set in near the head of the trees they will require some pruning in reference to spreading the top. The general tendency is for the top-worked tree to grow too compact. Cut the grafts back to one of the strong outside branches started by the first pinching back and it will give them a start in the right direction. What shall we do where two scions start in the same stub? Should the stub be less than three inches in diameter one should be removed at this time. Keep the stronger, or if there should be little difference, the one best situated to help make a good top. Cut the other off close, even to removing a small corner of the stump on that side; the wound will heal better. Should the stub be over three inches in diameter there is some argument in favor of leaving the extra graft another year. It will help callous over the stub, and may be removed the following spring, leaving a comparatively small wound. If left longer, or until the two grow together, the result is a bad crotch and sometimes a pressure which may actually split the stub.

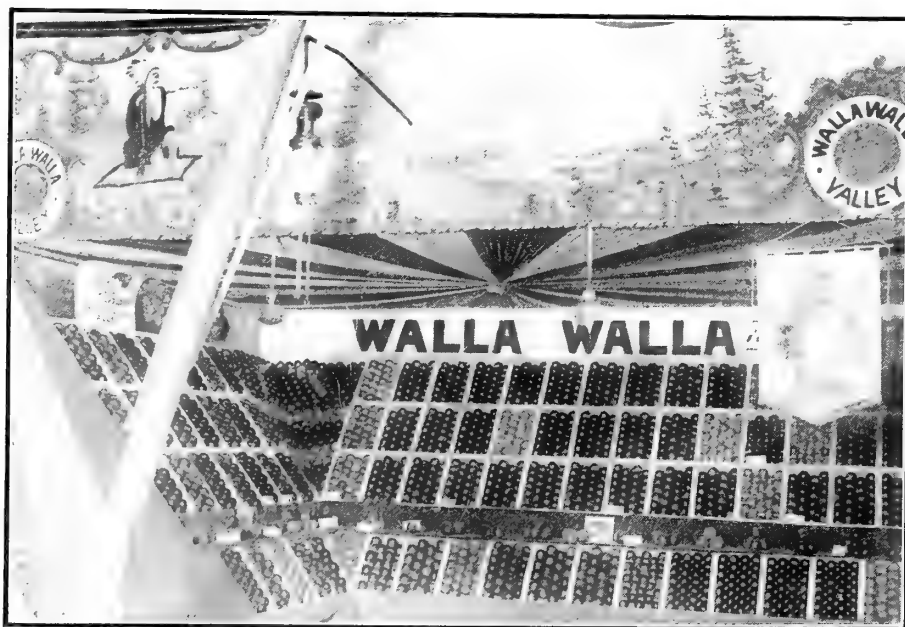
Subsequently pruning will consist in such cutting back as will help form a stocky and well shaped top. They will demand the same attention as young trees. Spread the top by pruning to outside buds or branches, and do not pay too much attention to the small wood. Some of the small branches may require cutting out or clipping back, but, remember, in it we have the start for early fruiting wood.

There is a growing conviction among the fruit growers that better results may come from planting vigorous young trees of some strong, growing kind to be later worked over to the desired variety. In the opening remarks on this subject, mention was made of the desirability of working weak growing kind on stronger root systems, as well as top working as a means of lessening loss from attacks of root rots and woolly aphis. The embarrassment of growing the orchard to a bearing age only to find some of the trees not true to name may be avoided by this plan of starting the young orchard. Then every fruit grower has observed that few trees of the same variety are alike in bearing habit and



Engraving by Hicks-Chatten Engraving Company, Portland, Oregon

FERRY COUNTY, WASHINGTON, DISTRICT DISPLAY, NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910



Engraving by American Engraving Company, Spokane

Photo by Frank Palmer, Spokane  
FIRST PRIZE IRRIGATED DISTRICT DISPLAY FROM WALLA WALLA VALLEY, WASHINGTON, AT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON, NOVEMBER 14-19, 1910, AND CHICAGO, ILLINOIS, NOVEMBER 28-DECEMBER 4, 1910

Continued on page 72



VIEW OF

# N. S. Titchenal's Orchard

CENTER OF FAMOUS WENATCHEE VALLEY

**Containing 27 acres, located one and three-fourths  
mile east of Cashmere, Washington**

On the main thoroughfare of the valley, ten miles from Wenatchee. This tract is watered from the Wenatchee canal, one of the best water systems in the state. The water right calls for one-half inch of water per acre, from April 15 to November 1, with maintenance fee of \$1.50 per acre. The trees are planted thirty feet apart each way, giving ample room for cultivation and spraying. The trees will be two, three and six years old next spring, and the varieties are Spitzenberg, Winesap and Black Ben Davis, with a few Stayman Winesaps that were mixed in the order by mistake. The 700 five-year-old trees produced this year 1,400 boxes of apples, most of which were extra fancy. The soil is a dark, sandy loam with a depth of more than ten feet. The above cut will show the lay of the land; the picture was taken looking north, the land sloping gently to the south. I wish to sell a part of this tract, as there is more than I care to take care of. I will sell 17 acres, in one or two tracts. Price \$1,500 per acre; one-half cash, balance time to suit purchaser. I also have a tract containing 5.69 acres, trees set twenty-five feet apart, four years old, three-quarters of a mile from depot, just outside city limits, with good four-room house and good well eighteen feet deep, with plenty of water. This is also watered from the Wenatchee canal, and lies well for irrigation. This place is for sale for \$8,500; one-half cash, balance terms to suit purchaser, at 8 per cent interest.

For further particulars call on or write or telephone

**N. S. TITCHENAL, Cashmere, Washington**

R. F. D. Box 95

Telephone No. 114

# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF  
THE NORTHWEST FRUIT GROWERS' ASSOCIATION  
A MONTHLY ILLUSTRATED MAGAZINE  
PUBLISHED IN THE INTEREST OF MODERN  
FRUIT GROWING AND MARKETING  
ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD

EDITOR AND PUBLISHER

C. R. GREISEN, *Assistant Editor*

H. E. VAN DEMAN, *Contributing Editor*

STATE ASSOCIATE EDITORS

OREGON

A. B. CORDLEY, *Entomologist*, Corvallis

C. I. LEWIS, *Horticulturist*, Corvallis

P. J. O'GARA, *Pathologist and Entomologist*,  
Medford

WASHINGTON

W. S. THORNBUR, *Horticulturist*, Pullman

A. L. MELANDER, *Entomologist*, Pullman

COLORADO

C. P. GILLETTE, *Director and Entomologist*,  
Fort Collins

E. B. HOUSE, *Chief of Department of Civil and*  
*Irrigation Engineering*, State Agricultural

College, Fort Collins

E. P. TAYLOR, *Horticulturist*, Grand Junction

IDAHO

J. M. ALDRICH, *Entomologist*, Moscow

UTAH

DR. E. D. BALL, *Director and Entomologist*, Logan

LEON D. BATCHELOR, *Horticulturist*, Logan

MONTANA

O. B. WHIPPLE, *Horticulturist*, Bozeman

CALIFORNIA

C. W. WOODWORTH, *Entomologist*, Berkeley

W. H. VOLCK, *Entomologist*, Watsonville

BRITISH COLUMBIA

R. M. WINSLOW, *Provincial Horticulturist*, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR

IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,

at the Post Office at Hood River, Oregon,

under Act of Congress of March 3, 1879.

**NATIONAL APPLE SHOWS.**—In the year 1908, Spokane conceived the idea of holding an apple show that would be national in significance, and of such magnitude as to impress the world with the fact that the Northwest was a wonderful apple producing section. For three consecutive years Spokane has held an immense apple show, successful from every point of view. Spokane was the first city to conceive the idea of giving such a show and of making carload displays of apples.

In the year 1909 Colorado gave an apple show, and in 1910 Vancouver held a national apple show, and also the City of Watsonville, California, located in the Pajaro Valley. A number of other apple shows were held at various points in the Northwest; one of the largest ones being at Portland, in Oregon, all of which were much larger than in any previous year, but not in carload displays—all of these shows are educational and instructive.

This year Spokane took the winning carloads to Chicago, displaying them in the armory, which will be of inestimable value in a publicity way to every section in the Northwest. The Colorado Apple Show was not repeated this year. It seems that we are justified in assuming that some of the cities which held apple shows on the carload basis this year will not repeat next year. The reason is apparent. The expense is enormous, and while we do not speak authoritatively,

we understand that the Spokane Apple Show cost about \$45,000, and to carry the exhibit to Chicago, put it up and meet all contingent expenses, \$35,000 more—a total sum of \$80,000, approximately. Now, while we do not know what the receipts were for admission and a few concessions at the Spokane Apple Show, we doubt if they exceeded \$30,000, leaving \$50,000 for the business people of Spokane to raise, all of which we understand is practically subscribed in advance through a publicity fund for the National Apple Show, furnished by the Chamber of Commerce and business men of Spokane.

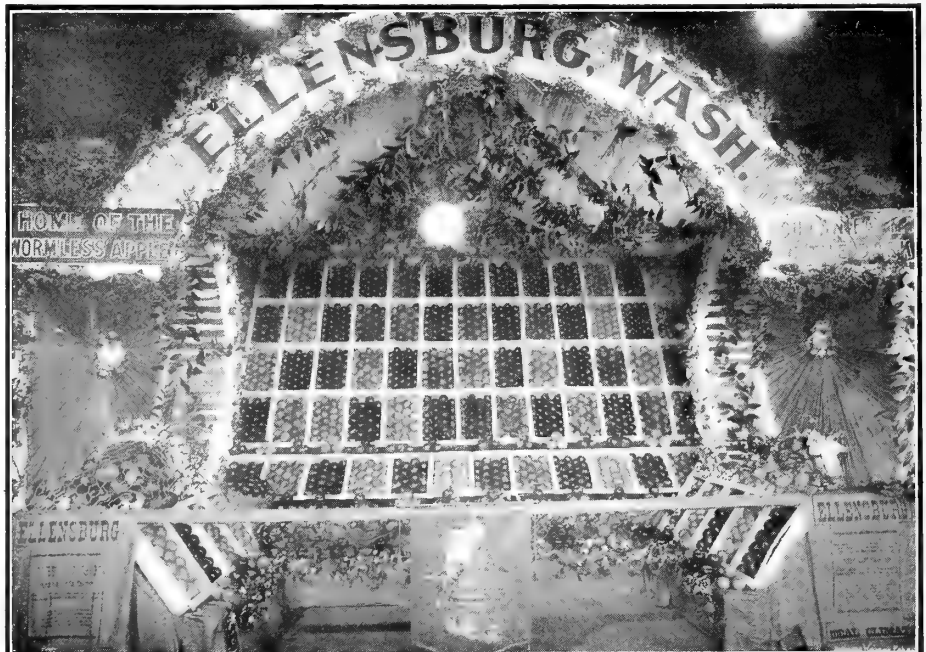
Judging from the expense of giving a national apple show and the receipts, it is evident that any city intending to give one will have to raise a fund of from \$25,000 to \$50,000 bonus, we doubt if there are very many cities in the Northwest willing to assume such an undertaking, and we cannot help but feel that it would be better to have one big apple show, a national apple show on a carload basis, than to have several which might be lacking in size and attendance. We do not wish to be understood as indicating that districts and cities in the Northwest should not have their local displays, such are certainly attractive and educational, and of great benefit in a publicity way, but we rather incline to believe that the Northwest can only support one big apple show on the carload basis, where 15 or 20 carloads are exhibited. We doubt if growers can, or would, support more than one by making carload entries.

It does not seem to us that growers in the Northwest would presume to dictate in which city the show should be held, but we are rather inclined to believe that Spokane is entitled to this privilege, providing its business men see fit to finance it, for the reason that Spokane originated the idea of an apple show.

Portland originated the idea of a rose show in the Northwest, and we believe it is justly entitled to continue this Annual Rose Festival, without other cities usurping their right. Seattle had its Yukon Exposition, in which all cities and sections of the Northwest joined to contribute to its success. Therefore we cannot see any occasion or any necessity for changing the existing program, providing these cities desire to give such exhibitions and to finance them with the support of their own business people.

♦ ♦ ♦  
**TO ADVERTISERS.**—The three fundamental principles every man should bear in mind, and particularly the advertisers in "Better Fruit" in composing copy, are, first, the ad should catch the eye; second, the ad should interest the reader, and third, the ad should convince the reader. Volumes have been written on composing copy, and we believe that everything that has been said along this line comes under one of these three heads, and we don't believe any more thorough or concise statement has ever been made than the above for the benefit of the man composing the ad.

♦ ♦ ♦  
**THE** immense apple crop of the Northwest becomes only a drop in the bucket, viewed in the proper light. If the crop is marketed in a business-like way and properly distributed it will be a long time before the Northwest will glut the markets. The apple crop of California, Colorado, Utah, Montana, Idaho, Oregon and Washington probably did not exceed 15,000 cars in 1910. 600 boxes to the car, 100 apples average to the box, would make 900,000,000 apples. If properly distributed so that every inhabitant of the United States could eat one apple a day, they would eat up every apple of this wonderful crop grown in these states in ten days. This is a plea for greater distribution.



Engraved by The American Engraving Company, Spokane  
ELLENSBURG, WASHINGTON, DISTRICT DISPLAY AT THIRD NATIONAL APPLE SHOW  
SPOKANE, WASHINGTON, AND CHICAGO, ILLINOIS, 1910  
Ellensburg Chamber of Commerce won first prize on most artistic limited display.



# PEARSON'S CEMENT COATED NAILS

*More widely used  
than any other kind!*

*Why?*

Acknowledged the best  
by all box makers

Order Pearson's

**A. C. Rulofson  
Company**

Pacific Coast Sales Agents  
Monadnock Building  
San Francisco, Cal.



**WE MAKE 200 DIFFERENT SIZES,  
SUITABLE FOR EVERY PURPOSE**

There must be merit in the *brand* of nails that has *created* and *satisfied* the demand of the box maker for over 25 years. During all that time the sales have steadily increased. This tells the whole story of the result of an earnest intelligent effort to produce the best nails possible for every purpose.

**J.C. Pearson  
Company**

Boston, Mass.  
Sole Manufacturers

# Strongest on the Market

FOR { SAN JOSE SCALE  
APPLE AND PEAR SCAB } NONE OTHER AS GOOD AS

## Ortho Lime-Sulphur Solution

Make money by buying new-processed and stronger solution for exactly the same price you have been compelled to pay heretofore for weak and uncertain product. Demand the best the market affords. The best is never too good. Demand O-R-T-H-O, the new aristocrat of sprays.

Yours for spray-efficiency and strength,

**CALIFORNIA SPRAY-CHEMICAL COMPANY**

MANUFACTURERS

WATSONVILLE, CALIFORNIA

Originators and sole makers of that incomparable arsenate of lead, the only strictly neutral kind manufactured anywhere in the world, and which Eastern manufacturers, belated in this advancing science, are now rushing to pirate. It is O-R-T-H-O Arsenate of Lead, protected by U. S. patents. Watch for our future ad.

## A Trip to the Coast

Is incomplete without a ride  
on the

## Mt. Hood Railroad

By mountain streams, virgin forests,  
apple orchards and snow capped peaks

Connects with O. R. & N.  
at Hood River, Oregon

CAPITAL STOCK \$100,000    SURPLUS \$20,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, *President*  
J. W. HINRICKS, *Vice President*  
E. O. BLANCHAR, *Cashier*  
V. C. BROCK, *Assistant Cashier*

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

Savings Bank in connection

Send us your  
White Salmon Valley Business

## White Salmon Valley Bank

Under state examination

White Salmon, Washington

**SOMETHING DOING.**—Evidently the East is becoming agitated on account of the popularity of the Western apples, which have been rapidly growing into favor for the past few years. The trade is buying Western boxed apples more extensively than ever before, and the consumers are eating them in greater quantities every year. Press reports throughout the East indicate this topic as one of the principal ones for districts where the most of the horticultural meetings are being held. Advance reports indicate this will be a main feature of the New York state meeting, and what is true of this meeting is true of other horticultural meetings. The Daily Oregonian, the best daily publication west of the Mississippi River and without any superior in United States, covers the subject in a way that meets with our approval in an editorial of January 6th, which we quote herewith:

"The New York Fruit Growers' Union is holding its tenth annual meeting at Rochester, and, according to news dispatches, the main point under discussion is 'how to meet the inroads of West-

ern apples in markets until now held by Eastern orchardists.' The remedy suggested is that the Eastern growers be taught to produce apples that will compare with the Western fruit in appearance as well as in quality. While it may not have occurred to the New Yorkers, the best method by which this desired end can be reached is for them to come out West and here grow Western apples. Rochester, where the fruit growers are meeting, produces good kodaks, collars and shoes, but for people not engaged in the production of these necessary staples Oregon offers advantages which vanished from New York when the last of the Mohicans went over the divide."

◆ ◆ ◆

**M**R. H. C. ATWELL, president of the Oregon State Horticultural Society, has called a meeting of the fruit growers from Washington, Oregon and Idaho to take place January 24th, in the Y. M. C. A. Hall, Portland, for the purpose of discussing organization and a central marketing agency for these three states. We intended to devote more space in this issue to this subject, but on

LESLIE BUTLER, President  
F. McKERCHER, Vice President  
TRUMAN BUTLER, Cashier

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000

Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

**We Give Special Attention to Good Farm Loans**

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - - \$1,000,000

Surplus and undivided profits - - - - - \$600,000

Officers:

W. M. Ladd, *President*  
Edward Cookingham, *Vice President*  
W. H. Dunckley, *Cashier*

R. S. Howard, Jr., *Assistant Cashier*  
J. W. Ladd, *Assistant Cashier*  
Walter M. Cook, *Assistant Cashier*

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

**HOOD RIVER BANKING AND TRUST COMPANY**

HOOD RIVER, OREGON

account of the edition being extra in size and the number of copies 15,000, and on account of the immense work connected with getting up this issue, we have been late in going to press, and consequently the edition will probably not be mailed out until the 20th of January, too late for our subscribers to reap any benefit of any further announcement that we could make. It is our intention to publish as full a report as possible on what is done in the way of organization, both at the state meeting at Prosser, Washington, and at the meeting which is being called by Mr. Atwell.

THE average edition of "Better Fruit" costs approximately \$3,000 a month. This edition costs approximately \$3,600. This does not include any salary or profit for the editor and publisher. In other words, it costs \$40,000 per year to maintain "Better Fruit" at its present standard, or over \$100 per day. It takes two weeks' run on a Miehle press to print an edition like this. We mention these matters hoping that they will convince the readers of "Better Fruit" that we need all the assistance we can get. We believe every subscriber enjoys "Better Fruit," appreciates it and finds it interesting, instructive and valuable. We hope every subscriber who loves "Better Fruit" will exert himself to send us in just one subscriber. Mr. reader, if you will do this it will so increase our circulation as to justify us in making a slight advance on our advertising rates, which in turn

will contribute much towards making the publisher's life a pleasure instead of a life of care and anxiety for 365 days in a year.

THIS edition of "Better Fruit," which is devoted to the National Apple Show, contains 108 pages, of which 15,000 copies are published. This means that in printing this issue we print 1,620,000 pages. The length of a page is one foot; if the pages were stretched out in a line, the line would be 1,620,000 feet. As there are 5,280 feet to a mile, it would mean that "Better Fruit," if extended in a straight line, one page after another, the line would be over 307 miles long.

Some idea of the increase of "Better Fruit" may be gleaned from the following comparison. During the first year we printed 1,152,000 pages in "Better Fruit." In this edition of January, 1911, we have 1,620,000 pages, or over one-third more pages in one month than published the entire first year.

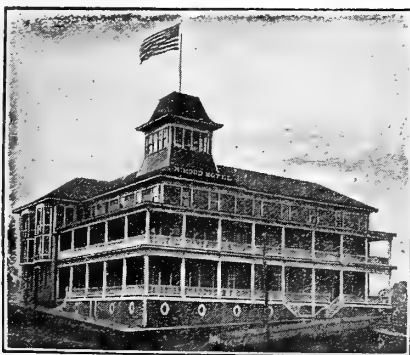
THIS edition of "Better Fruit," our Apple Show Special, is an edition of 15,000 copies, and contains over 100 illustrations, with good descriptive illustrated articles about nearly every apple show that has been held in the Northwest during the year 1910.

The columns of "Better Fruit," Hood River, Oregon, will bring your story before 12,000 fruit growers who are enjoying the fullest prosperity. They are the owners of big, productive fruit farms, to whom the whole country looks for its fruit supply.—Publishers Bulletin.

## WILLAMETTE VALLEY FARMS

If you are coming West, write to me and let me tell you about the fertile and bountiful Willamette Valley in Oregon. Ask all the questions you want; I will tell you the facts. Send for my free list of Willamette Valley farms. Here is a bargain for some one—160-acre farm midway between Albany, the hub of the Willamette Valley, and Corvallis, the home of the Oregon Agricultural College; beautifully located, 60 acres in alfalfa, an ideal dairy farm, \$150 an acre. Write today for free descriptive booklet.

Address, J. A. HOWARD, Albany, Oregon



### The Apple Growers

Make their headquarters at

## Mt. Hood Hotel

Hood River, Oregon

PICTURESQUE LOCATION  
OVERLOOKING THE  
COLUMBIA

Moseley & Larsen, Props.

Faculty Stronger Than Ever  
More Progressive Than Ever

Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

# Behnke-Walker Business College

PORTLAND, OREGON

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

## HOOD RIVER MILLING CO.

C. M. SHAW

ROY F. DEAN

### Dean & Shaw

Electrical Supplies and Fixtures  
Scientific Electrical Construction

Home Phone 3 Hood River, Oregon

## Grinnell, Collins & Co.

(Incorporated)

Minneapolis, Minnesota

### WHOLESALE FRUIT AND PRODUCE

We want the best pack and quality

Apples Pears Peaches

We have modern cold storage facilities  
CORRESPONDENCE SOLICITED

## Rogue River Fruit and Produce Association

C. W. WILMERTH, Manager

Main Office, Medford, Oregon

We will distribute the entire output of the Rogue River Valley—The world's most famous pears—Our Spitzenbergs won first prize in 1909—We use the Revised Economy Code

Loading Stations

Ashland, Medford, Grants Pass, Eagle Point, Gold Hill, Central Point, Talent, Woodville, Phoenix, Voorhies, Merlin and Jacksonville.

## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries, Plums, Prunes, Apricots, Grapes and Cantaloupes

Mixed carloads start about July 20. Straight carloads in season. Our fruit is the very best grade; pack guaranteed

We use Revised Economy Code

## Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

## Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds  
Growing Plants as season requires  
All makes high grade  
Pruning Tools  
Garden Tools  
Hose and Spray Nozzles  
International Stock and  
Poultry Food  
International Remedies  
Incubators and Brooders  
Everything for Building  
Everything for Furnishing

Stewart Hardware & Furniture Co.  
22,000 feet floor space Hood River, Oregon

## THINGS WE ARE AGENTS FOR

KNOX HATS

ALFRED BENJAMIN &amp; CO.'S CLOTHING

DR. JAEGER UNDERWEAR

DR. DEIMEL LINEN MESH UNDERWEAR

DENT'S and FOWNES' GLOVES

Buffum &amp; Pendleton

311 Morrison St., Portland, Oregon

## The PARIS FAIR

Hood River's largest and best store

DRY GOODS  
SHOES, CLOTHING

We are offering some extra  
specials in our Clothing De-  
partment. Ask to see them.

Try a pair of American Lady  
\$3 and \$3.50 Shoes, or American  
Gentleman \$3.50 and \$4 Shoes

WHILE in the East last year the editor visited a large apple orchard which produced its first crop at twelve years of age, and was told that generally apple orchards in the Eastern States, with the exception of some few varieties, do not begin to bear until they are twelve years old.

This gives a little opportunity for mental arithmetic. If land in the East costs \$100 per acre and it costs \$25 per acre per year to care for an orchard, expenses being about the same in the East as in the West, and you have had to care for it for eleven years before it begins to bear, it would cost a man \$375 per acre at bearing. This would not include living expenses, taxes or interest. Good fruit land in the Northwest can be bought for \$200 and less per acre. Care for six years at \$25 per acre would be \$150, making a cost of \$350 at the end of six years. Net profit has been on an average, and will be in the future, in all probability, in good fruit districts:

Net profit at 6 years of age.....	\$ 100
Net profit at 7 years of age.....	200
Net profit at 8 years of age.....	300
Net profit at 9 years of age.....	400
Net profit at 10 and 11 years of age.....	500

Total profit at beginning of twelfth year..	\$1,500
Less the cost of the land and caring.....	350

Leaving a profit for the eleven years of..\$1,150

On the other hand, in the East at the beginning of the twelfth year you would be out on your investment and care \$375, whereas in the West, at the beginning of the twelfth year, you would have all the money invested out, and \$1,150 to the good per acre.

Which is the best place to engage in fruit growing, East or West?

HOW do you like the editorial page of this edition? The items are short, but they suggest many subjects for the consideration of the fruit grower, and some of these subjects we will take up in future issues and discuss at greater length. We will be pleased to have short articles from fruit growers commenting on any of the editorials of this issue, any criticisms that might seem proper to the subscriber, and the further expression of his views on any subject mentioned. Of such letters we will publish the best from time to time as our space will permit.

ONE of the late governors of Oregon became famous for his reply to the President of the United States, whom he considered had interfered in state affairs, by sending the following message: "You attend to your business and I will attend to mine."

The East, which grows barrel apples almost exclusively, is attempting to regulate the size of the box that Western apple growers use. To the East we repeat the reply of Oregon's governor and say: "You attend to your business and we (the West) will attend to ours."

J. M. Schmeltzer, Secretary

Hood River Abstract Company  
Hood River, Oregon

ABSTRACTS INSURANCE  
CONVEYANCING

## S. E. Bartmess

UNDERTAKER AND  
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

Hood River, Oregon

## W. F. LARAWAY

DOCTOR OF OPHTHALMOLOGY

EYES  
TESTEDLENSES  
GROUND

Over 30 Years' Experience

Telescopes, Field Glasses  
Magnifiers to examine scale

Hood River  
Oregon

and

Glenwood  
Iowa

## VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.

HOOD RIVER, OREGON

## STORAGE

Ship your Furniture to us  
to be stored  
until you are located

Transfer & Livery Co.

Hood River, Oregon

## D. McDONALD

Hood River, Oregon

Headquarters for

FARMING AND ORCHARD

## TOOLS

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best



THE Hood River Apple Growers' Union has had a fairly good season considering the quite general widespread unsatisfactory condition of the market which has prevailed. In going over the market situation the manager of the Hood River Apple Growers' Union, Mr. C. H. Sproat, has the following to say: "We think the Hood River Apple Growers' Union has fared very favorably when comparison is made with results which other box apple sections have obtained this year. At the same time the results are somewhat disappointing to the Union. The general conditions which prevailed throughout the latter part of the season were very unusual. The trees were heavily loaded with fruit, and while we were anticipating a large crop of average sized apples, the fine growing weather and the early fall rains seemed to produce apples of very unusual size. This in turn produced a very much larger crop than was anticipated in the month of August. In years gone by, the highest priced apples of our fancy grades have been the extremely large ones, for the reason that people seem to want what they have difficulty in getting, there being very few large sized apples on the market in years gone by. These brought high prices. This season the 120s and 128 sized Newtowns and Spitzenbergs were very scarce, so much so that the Union had to cancel several carload lot orders because it was impossible to procure these sized apples; and on the other hand in years past we have had a very fair proportion of 4½-tier stock of

Spitzenbergs and of Yellow Newtowns, which have always sold very readily. This season we were obliged to disappoint Steinhart & Kelly, for we were only able to supply them with a very small per cent of their needs of 4½-tier Spitzenbergs and Yellow Newtowns. This firm has a special trade which uses a very large output of this sized fruit. The relations which have existed between Steinhart & Kelly and the Hood River Apple Growers' Union this season have been along the same lines as have prevailed in the three seasons past, in which they have handled our apples. Without casting any reflections on any other f. o. b. buyers the Union feels called upon to express its unqualified approval of the business methods of Steinhart & Kelly: Of the hundreds of cars which they purchased of us this season f. o. b. Hood River they have not rejected a single car, and only in a very few cases have they written back making any criticisms relative to the quality and packing of the goods. In five or six cases they have specified that certain growers' packs were not up to the regular grade, and asked us to call the attention of these growers to the matter. In view of the fact that the market conditions early in the season were not in favor of f. o. b. buyers the acceptance of all of our goods sold early in the season to this firm is a very pleasing incident in connection with our business.

"We hardly think that the people of Hood River Valley really appreciate the valuable services which Steinhart &

Double your crop yield.  
Double your income.

USE

# Nephi Land Plaster

Famous throughout the West. The dependable brand that has brought results to the scientific and industrious agriculturists of Oregon and the Northwest for more than twenty years. Highest chemical and most desirable physical qualities of any land plaster on the market.

## CAUTION

Insist on NEPHI. Do not risk an experiment.

*Sold by the most prosperous  
dealers in every community.*

## NEPHI PLASTER & MFG. CO.

Main Office: Boston Building

Salt Lake City, Utah

WRITE FOR BOOKLET

## "I HAVE SO LITTLE FUNGUS

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."

Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

**PRICES:** In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY

## THE NEW WEST

Is full of surprises. It is no longer the land of cowboys, coyotes, blanket Indians. Instead of illimitable sagebrush desert, one finds fruit laden orchards, heavy headed grain, green meadows and alfalfa fields. It's the best of God's out-of-doors country—clear skies, pure air, snowclad mountains, waterfalls, odorous pine woods. Read all about it in The Pacific Monthly, magazine of the West.

The Pacific Monthly Company,  
Portland, Oregon.

I am interested in the New West. Send three recent numbers of your magazine, for which I enclose 25 cents.

Name.....

BF Address.....

## THE MIDWEST RASPBERRY

Glossy black, large as Cumberland, most productive, finest flavored, hardy black raspberry yet introduced. Send for catalogue describing this and our high grade nursery stock. The Peru Nursery, J. P. Duncan & Co., Box 512, Peru, Nebraska.

## POULTRY AND FRUIT FARMING



"The Billion Dollar Hen!" Yes, that is where the chicken of today stands, and great fortunes are being made each year from a few hens and a small piece of ground. Read the "A B C and X Y Z in Poultry," beginning with next issue of

American Hen Magazine

Council Bluffs, Iowa

25 cents for a whole year. Descriptive circular free

## Greider's Fine Catalog

of pure bred poultry, for 1911, over 200 pages, 57 large colored pictures of fowls. Calendar for each month. Illustrations, descriptions, photos, incubators, brooders, information and all details concerning the business, where and how to buy fine poultry, eggs for hatching, supplies, etc., at the lowest cost, in fact, the greatest poultry catalog ever published. Send 15c for this handsome book.

B. G. GREIDER, Box 72, Rheem, Pa.

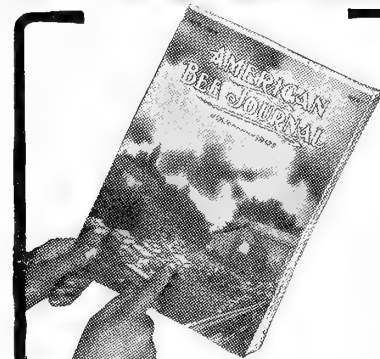


## BEEKEEPING

### ITS PLEASURES AND PROFITS

Is the theme of that excellent and handsomely illustrated magazine, GLEANINGS IN BEE CULTURE. We send it for six months on trial for twenty-five cents, and also send free a 64-page book on bees and our bee supply catalogue to all who name this paper. THE A. I. ROOT CO., Box 83, Medina, Ohio.

# FREE!



## COPY of the Best BEE-PAPER

We want every live bee-keeper to know how much help there is in the "old reliable" American Bee Journal. It is now the brightest, cleanest, newsiest monthly bee-paper published. We want everyone interested in bees and bee-keeping—beginners or experts—to write for a free copy of the

## AMERICAN BEE JOURNAL

Then you will appreciate what a big help it will be to you in keeping bees. Experienced talks by expert bee-men; answers to questions about everything pertaining to bees; special department for women who keep bees; a paper that you'll learn to look for every month.

AMERICAN BEE JOURNAL  
Chicago, Illinois

## WRITE FOR CATALOGUES AND PRICES

# TREES

Book orders now for the following  
Standards:

APPLES:—Alexander, Red Astrachan, Gravenstein, White Astrachan, Jonathan, Rome Beauty, Spitzenberg, Bellflower, Newtown Pippin, Grimes' Golden Pippin, Winterley, McIntosh Red, Winesap, Wagner, Winter Banana, Arkansas Black and many others.

PEACHES:—Tuscan, Orange, Phillips, Levi, Foster, Triumph, St. John, Early Crawford, Elberta, Muir, Lovell, Fay-Elberta and Salway.

CHERRIES:—Black Tartarians, Bing, Black Oregon, Black Republican, Royal Ann, Lambert.

Also standard varieties of Plums, Prunes, Apricots, Almonds, Pears, Quinces, Persimmons, Figs, Oranges, Lemons, etc.

Our trees are selected, thrifty, well-rooted and true to name.

WRITE US AT ONCE

FAY ELBERTA:—The improved Elberta. The best peach of the season. Write for descriptive circular.

The Silva Bergtholdt Co.

204 Orchard Street, Newcastle, California



"I consider the course of the Oregon Agricultural College intensely practical."

Signed J. Roscoe Lee, Baker City.

◆ ◆ ◆

To the Oregon Agricultural College: "The work was interesting, instructive and practical."

Signed F. M. Huffman, La Grande.

### AUTHENTIC INFORMATION

Railway men say the colonist movement westward in 1910 will be unprecedented. Thousands are harkening to the call and fortunes are being made now by the early arrivals. New railroads are opening up vast, almost limitless new territory. Let us tell you about it. Send 25 cents in stamps for information.

The Pacific Monthly Company,  
Portland, Oregon.

Enclosed find 25 cents for three recent numbers containing articles relative to land conditions in the West.

Name.....

BF Address.....

Kelly have rendered in the past and are rendering at the present time to this vicinity. It is no small affair for a firm to purchase f. o. b. 3,000 miles from their place of business hundreds of thousands of dollars' worth of apples, and this is what Steinhardt & Kelly have done, and have accepted without rejection all of their purchases this season, and in fact in all the seasons in which they have dealt with this Union they have accepted their purchases without the rejection of a single car of apples.

"There has been one bad feature of the trade this season which, if possible, should be remedied. Quite a few independent shippers who refrained from joining the Union have sent their high class apples to New York City to be sold on consignment. This fruit necessarily had to go into the market against the f. o. b. purchases of Steinhardt & Kelly. If this method of business continues it will be a wonder if any firm will desire to come to Hood River Valley from the East and put up a large amount of money on an f. o. b. basis and know that their purchases are to go into the market against consigned fruit. It is to be hoped that other methods will prevail with the independent shippers next season. We have had very pleasant business relations with firms in other large cities in the East, although not of anywhere near the magnitude of the business which has been done with Steinhardt & Kelly.

"The Union this season, up to date, has sold apples in 25 states of the Union and in 65 different cities to 87 different consignees. While here and there it has been necessary to allow some rebates from the original invoice price, owing to the poor condition of some of the varieties upon arrival at destination, on the whole we have found the f. o. b. purchasers straightforward and upright business men, and, generally speaking, wherever a rebate has been necessary, we believe the consignee in most cases was justified in asking for the same.

"We think it is excusable on our part to mention the name of Steinhardt &

Kelly in connection with this article, for the reason that it is known all over the United States that this firm is the sole representative of the Apple Growers' Union in New York City, and the business done is of very large volume. We could name many other firms outside of New York City whose business has been equally as satisfactory, and would be pleased to do so only for a good business reason, that we do not care to have the names of our consignees published to the world at large. We have made an earnest effort this season to distribute the Union apples over as wide a territory as possible, and we do not wish the unnamed consignees to feel that there is any reflection on our part against them

## FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

### BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

Bridal Veil Lumbering Co.

Hood River, Oregon

YOUNG man of good habits, willing and ambitious, 23 years of age, desires position on fruit, dairy or general farm to learn business. Can wait until April or May 1st. Address L. B., care "Better Fruit."

### SITUATION WANTED

Practical orchardist seeks position as manager of large acreage bearing orchard or packing house. Ten years' trade experience, three years in British Columbia; packing experience, Hood River. Also knowledge of bookkeeping. Hood River or Okanogan districts preferred. Write A. M. Curtis, 611 Superior Street, Victoria, B. C., Canada.

# Now Ready—

## Portland Seed Co.'s Complete Annual Catalog for 1911

Specially prepared for Northwestern growers. Fully illustrating and presenting profitable varieties for you to grow. Latest and best equipments for farmer, orchardist, poultryman and beekeeper.

## The One Catalog for the Careful Buyer

To those interested sent **free**. Write today asking for Catalog No. 200  
Whether you buy or not we would like to send you our special literature.

Our **Diamond Trade Mark** is a guarantee of **Quality, Satisfaction and Full Value**, backed by twenty-five years of success right here in the Pacific Northwest.

# PORTLAND SEED CO. PORTLAND, OREGON



when we have spoken so very favorably of the New York firm. Very much over one-half of all our f. o. b. business has been done outside of New York City, and should this article reach the attention of our different consignees in the widely scattered cities of the country where our goods have been sold this season, we herewith desire to thank them for their patronage and for the satisfactory business relations which have existed between us."

◆ ◆ ◆

There seems to be an impression that much land is being planted to apples that would make better hay, grain and pasture. Intelligence must be shown in locating an orchard if results are to be expected.

◆ ◆ ◆

The horticultural societies in the East, and particularly in New York, where apples are packed exclusively in barrels, voted unanimously to regulate the size of box to be used out West. WHY?

◆ ◆ ◆

To copy someone else is easy; to originate requires brains.

#### ARE YOU INTERESTED IN BEE KEEPING, POULTRY AND GENERAL FARMING?

No section of the United States offers better opportunities for those interested in the subjects mentioned than the West. The supply does not begin to equal the demand. Prices are good, profits exceptional. If you want to know more about the opportunities in the West and Northwest, use the coupon. The Pacific Monthly Company,

Portland, Oregon.  
Enclosed find 25 cents. Please send three recent numbers telling about bee keeping, poultry raising, etc.

Name.....  
BF Address.....

#### THROUGH THE SOUTH SEAS WITH JACK LONDON

Jack London saw many strange sights in his year's cruise on the "Snark." Not all of us will have the opportunity of making such a voyage, but we can enjoy the enchantment and novelty of such a trip through the descriptions of such an artist as London. The series of travel sketches is running now. Send this coupon and get started right.

The Pacific Monthly Company,  
Portland, Oregon.  
Enclosed is 25 cents. Send three recent issues containing Jack London's South Sea articles.

Name.....  
BF Address.....

## Do You Want An Orchard In The Willamette Valley?

In order that we may dispose of our few remaining orchards, we offer a special inducement to purchasers in the way of transportation. This special offer, combined with our low prices, easy terms and a contract with many attractive features, makes this a bargain not to be found anywhere else in the fruit growing districts. They will not last long.

Write for descriptive literature and details of this special offer.

### OREGON APPLE ORCHARDS CO.

Eastern Office, Bloomington, Illinois  
Western Office, 452 Chamber of Commerce, Portland, Oregon

A prominent official of the O. R. & N. is reported as saying: "There is too much apple talk." We should rather incline to think this remark was twisted; it would seem more proper not to say there is too much apple talk, but that there is lack of sufficient talk about the opportunities in the Northwest for stock, dairying, grain, hay, timber, fishing and many other unlimited resources. We say, "Kick at the fellow who does nothing, but don't kick at the man who is up and doing."

◆ ◆ ◆

A frivolous fly got stuck on a piece of fly-paper and asked: "Why are my legs like Pearson's cement coated nails?" "Give it up," said the other fly. Answer: "Because they stick and I can't pull them out."

◆ ◆ ◆

Fruit growers must be making money or have excellent credit, because they are all getting automobiles. One fruit grower in a prominent district took the editor out for a ride a year or so ago behind a Shetland pony you could carry around in your vest pocket. Now he is riding around in an auto that cost several thousand dollars. Evidently there is money in the fruit business, and we would not be surprised to hear that this prominent fruit grower owns an airship in a few years. He is thrifty and prosperous, and lives in one of the best fruit counties of the Northwest.

◆ ◆ ◆

To make two blades of grass grow instead of one is good farming; to make one good apple grow in place of two poor ones is **better** apple growing.

◆ ◆ ◆

Summer apples and some are not, when you buy a barrel of Eastern apples. Holy writ says: "By their fruits ye shall know them."

◆ ◆ ◆

A great many fruit papers are edited by horticulturists living in large cities; "Better Fruit" is run by a rancher living in an orchard two miles from the little town of Hood River, a famous apple country.

◆ ◆ ◆

For the fruit grower:

"It is easy enough to be pleasant

When life flows along like a song,

But the man worth while

Is the man who will smile

When everything goes dead wrong."

A man asked the editor of "Better Fruit" to what one thing mostly he attributed his reputation. Answer: By being able to say, "I don't know."

#### WHAT \$100 WILL DO FOR YOU IN TEXAS

It will buy one gold bond bearing eight per cent interest and \$50 stock in new company and one town lot in Aldine, near Houston, the greatest city in the Southwest. Terms either cash or monthly. Full particulars free. Address E. C. Robertson, general sales manager, 501 Kiam building, Houston, Texas.

## ORCHARDIST SUPPLY HOUSE

### FRANZ HARDWARE CO.

Hood River, Oregon

#### APPLE AND GRAPE BOOKLETS

Telling how the \$5.00 a box Apples and Sweepstakes Winner Grapes are grown in the **most beautiful orchard valley in the world**; both booklets sent by mail on receipt of 10c, stamps or silver. Address Secretary Improvement Co., Clarkston, Washington.

#### FOR SALE

A fine bearing apple orchard that will produce 10,000 barrels of apples in a year.

Address W. J. STEVENS

4448 Olive street, St. Louis, Missouri

**A COLORADO FRUIT FARM.**—On Western Slope 8 miles west of Glenwood Springs, consisting of 115 acres. 80 acres cultivatable, 20 acres in bearing orchard, 2 acres of grapes, 50 acres in alfalfa and potatoes. 5-room house, barn, blacksmith shop, fruit sheds, etc. Team horses, wagon, furniture, and in fact everything necessary for working same. 2 cubic feet of water per second of time. Will consider a trade. FERRIS & CONAWAY, DENVER, COLORADO, Real Estate, Rentals, Loans and Insurance.

## Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. Send for prices.

RAWSON & STANTON, Hood River, Oregon

# *Increase Your Profits!*

By  
Using

## **FANCY LABELS**

on Your  
Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*

### *Schmidt Lithograph Co.*

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

## **SLOCOM'S BOOK STORE**

**Office Supplies  
Stationery**

Ledgers, Journals, Time Books

Memorandum Books

Rubber Stamps

Souvenir Postals

Picture Frames

IF YOU WANT TO KNOW ABOUT

## **OREGON**

SUBSCRIBE FOR

**The Chamber of Commerce Bulletin**

The largest commercial magazine in the West

Devoted to upbuilding Oregon and  
the Pacific Northwest

SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

**The Chamber of Commerce Bulletin**

DAVID N. MOSESSEHN, *Publisher*

Suite 616 Chamber of Commerce Building  
Portland, Oregon

Continued from page 62

character of fruit. No doubt, many growers have some particular tree in their bearing orchard which is better than all others, that is nearer their ideal. By choosing grafting wood from this tree, a young orchard may be grown as near like it as is possible. There are productive and unproductive trees in every orchard, and the careful selection of scions from productive trees will avail much as means of building up a fruitful orchard.

In top-working young trees it is a common practice to set the trees where they are to grow, and after the scaffold limbs are well formed to graft or bud into these the future top. Some Eastern men have advocated purchasing two-year-old trees in the fall (trees in which the head is already formed) to be grafted over indoors in December. In the West, and especially on a large scale, this system would hardly seem practical. The method of grafting in this case is whip grafting.

In grafting young trees in the field it is probably well to do it as early in the life of a tree as possible. As soon as a good strong framework can be secured the tree is ready for top working. The small size of the stubs make cleft grafting difficult and kerf grafting almost out of the question. Some growers, however, report good success in cleft grafting young trees after two years' growth from a yearling whip. In this case the stubs must be bound with waxed cloth or other material to hold the scion

firmly, and then waxed as in cleft grafting larger stubs.

Another style of grafting, known as whip grafting, is well adapted to working these small stubs of young trees. The process is well illustrated in Figure 6. With this style of grafting it may be possible to set the scions after one year's growth in the field, but it is doubtful whether much time will be gained by such practice. The scion should be as near the size of the stub as possible, if anything, a little smaller. The cambium of the stock and scion is matched only on one side, paying no attention to the other. The joint should be well wrapped with waxed cloth and, to be doubly sure all air is excluded, may be painted over with a warm wax.

In grafting young trees it is a common practice to remove all of the top, placing scions in those arms one wishes to keep. It is always well to work a few extra

## **Paste for Labeling**

**"PALO ALTO" PASTE POWDER**

added to cold water, instantly makes a beautiful smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss, No spoiled paste.

**Paste Specialists**

**Robinson Chemical Works**

349-351 Eighth Street  
San Francisco, California



stubs, as accidents may befall some of the scions. The season for top grafting the young trees is the same as for old trees. While top-working the old trees tends to hasten the bearing of the scions, it is doubtful whether top-working young trees induces earlier fruitfulness.

Budding is no doubt the simpler method of putting a new top on young trees. While the process of budding is a little more delicate than that of grafting, the average man can, with a little practice, get very satisfactory results. Buds should be placed as soon as the top is well formed, setting one or two in each scaffold limb that is to be retained. The buds are generally set from six to twelve inches from the main stem, depending on the formation of the head. Trees two years old when set may generally be budded the following fall, and should yearling whips make a strong growth, the arms may be large enough to receive buds in September. Any stem as large as a lead-pencil may be budded quite easily. Arms in which buds fail to start may be grafted the following spring. Should arms fail to appear in the proper place it is quite possible to supply them by setting buds directly into the body of the young tree. When the buds begin to push into new growth they will require about the same care as young grafts. They will need some pinching back to strengthen the stem and to overcome the tendency to become top-heavy. With the possible exception of young trees budded in late spring, all growth from original stock should be removed as fast as it appears.

Buds may be set during the month of June or early July, or in August and September. For June budding the bud-sticks are cut as soon as well matured wood may be found. Good firm wood, with well developed buds, may generally be cut from bearing trees in the latter

part of June. As soon as buds set in June or July unite with the stock, the bandage is cut and the part of the stock above the bud is removed. In spring-budding it is well to leave some of the new growth which springs from the arms below the bud. This takes the surplus sap and helps nourish the roots until the buds are well started. Wood from buds set in the spring may not mature well in our climate, and is susceptible to winter injury during severe winters. With careful watering it is possible to mature the wood properly, but where practical, fall budding should be given the preference. In the case of peach trees, June budding is preferred where attacks of twig borers often destroy in early spring buds set the previous fall. In the apple and pear it is probably more convenient to bud in the fall. Then, too, arms which are large enough to bud in early spring were large enough the previous September, so one really gains rather than loses time by budding in the fall.

In fall budding the buds are taken from the current year's growth. Buds may be inserted in wood of one, two or three years' growth. The stiffness of the bark of the other wood makes budding difficult. The heavy bark not only makes the insertion of the bud difficult, but in drying out it curls away from the bud, exposing it to the air. The simplest form of budding is that known as shield-budding or T-budding. The position for the bud is chosen with reference to the prevailing wind, protection from the sun's rays, or to best form the top of the tree. The most important factor should determine where the bud should be placed. It is well to place the bud on the shady side of the stock, if possible. Should the locality be subject to strong prevailing winds, the bud should stand more wind if placed on the side of the stock toward the wind. A T-shaped incision is made in the bark and the corners of the bark below the transverse cut raised to facilitate starting the bud. The bud is then cut from the bud-stick

"I have been in the orchard business for twenty years. My short stay at the O. A. C. has been of great value to me."

Signed B. Leis, Beaverton, Oregon.

Oregon Agricultural College: "I cannot speak too highly of your common sense methods of dealing out practical knowledge to the farmers of the state."

Signed H. A. West, Oswego, Oregon.

### FOR SALE—100 ACRES

Or any portion thereof, of choice apple grove, located in Apple Valley, forty miles east of Redlands, California. Elevation 2,800 feet; dry, crisp atmosphere and ideal soil conditions; an irrigated proposition; abundance of water; age of trees, 2, 3, 4 and 5 years; price, according to age, from \$300 to \$1,000 per acre, or will sell the whole grove as an entirety for \$70,000.

For Further Particulars Address

W. B. AMES

Central Building,

Los Angeles

## RICHLAND NURSERY

Richland, Washington

### FRUIT TREES

Complete stock of leading varieties of Apples, Pears, etc.

WRITE US FOR PRICE LIST

**GALBRAITH "NEW LAND" FRUIT TREES**

**FREE FROM DISEASE GROW FASTER**

Nebraska trees thrive best everywhere—famous for heavy fruiting. Yearling apples 9c. Cat-alpa Speciosa, \$2.00 per 1000. Varieties for Northwest.

We sell direct—no agents—save you one-half and pay freight. We comply with all requirements for interstate shipments. Complete Catalogue free.

**GALBRAITH NURSERY CO., Box 47, FAIRBURY, NEB.**

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 1 and 2 Lambert-Sargeant Building  
Corner East Alder Street and Grand Avenue  
PORTLAND, OREGON

# TREES

All Varieties

TRUE TO NAME. BUY THE BEST

### BURBANK'S NEW STANDARD PRUNE

We call special attention to this new prune, a cross between the Tragedy and Sugar Prune. Best for drying and shipping. Every grower should include it in his order.

**BURBANK'S NEW PATAGONIA STRAW-BERRY**, the strongest grower, most productive and delicious ever produced.

California Horticulture, the Fruit Growers' Guide, 120 pages, profusely illustrated, 25 cents postpaid.

### ANNUAL PRICE CATALOGUE FREE

New illustrated price list containing brief description of all stock carried by us will be mailed free if you refer to this ad.

**Fancher Creek Nurseries, Inc.**

Geo. C. Roeding, President and Manager

P. O. Box 10

Fresno, California

## BETTER TREES MEANS BETTER FRUIT

Nursery stock grown under careful supervision means

### GREAT ADVANTAGES TO THE PLANTER

Twenty years of practical experience in the orchard, as well as the nursery business, means that we know how to grow trees that will give results. Henry Holterman, of Creswell, Oregon, says of our stock: "Of the 1,800 apple trees purchased of you last spring, we did not lose one tree. The orchard is the best, for the time being planted, of anything in this vicinity. Sold for \$300 per acre in less than six months after being planted."

Let us figure on your want list. Our prices are right. A special discount on cherry trees for a limited time—15 to 20 per cent, according to grade and quantity.

**LAFAYETTE NURSERY CO.**

Mention "Better Fruit"

LAFAYETTE, OREGON

## EVERY PLANTER SHOULD HAVE OUR



# SEED CATALOG FOR 1911

IT TELLS ALL ABOUT SEEDS, BULBS, POULTRY AND BEE SUPPLIES

Write Today. If You Mention Name of This Paper You Get a Packet of Our Choice SEEDS FREE

**THE BARTEDES SEED CO., DENVER, COLO.**

## WAGNER CREEK NURSERY & ORCHARD COMPANY

Talent, Oregon

Send for special prices on  
Yellow Newtown Apples and  
English Walnuts.

## WALNUT TREES

Mayette, Franquette,  
Parisienne, Etc.

Our trees grafted on the *Eastern black walnut stock*, are hardier and better for the Northwest as well as for Eastern planting. Write for price list and other information.

The Louisiana Nut Nurseries

Jeannerette, Louisiana

## ORCHARDISTS' SUPPLY CO.

W. M. Grisinger, Manager  
301 Newhouse Building, Salt Lake, Utah  
January 15, 1911.

We offer for spring delivery a splendid stock of standard commercial sorts of one-year apples, peaches, sweet cherries, etc., at wholesale and retail.

GET CATALOG AND PRICE LIST  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlementier

Grower of Choice

### NURSERY STOCK

F. W. SETTLEMIER

Woodburn, Oregon

## TREES in Quantity, Price and Quality

Growers and importers of a full line of all nursery stocks—apples, pears, prunes, cherries, peaches, etc. Large or small orders—we fill all. Just drop us a few lines giving your list of wants, and receive offers which we know will interest you. Have always given satisfaction and can do so now.

*We want to get in touch with planters.*

CARLTON NURSERY CO.

Carlton, Oregon

by starting the knife half an inch below the bud, cutting under and to about the same distance above the bud. This gives a long bud, which is especially desirable in our dry climate. In cutting under the bud, the knife should be run deep enough to leave a small shield of wood. Figure 7 will show the various steps in the process of shield budding. A simpler method of lifting the bud, at least for the beginner, is to start the knife as before and cut sharply into the wood to about one-third the diameter of the stick and then upward under the bud, making a tongue about an inch long. The knife is then run across the tongue half an inch above the bud, cutting through and lifting the bark at this point. The bud is then grasped between the thumb and first finger and lifted, leaving the wood on the stick, as shown in the same figure. While the removal of the wood from under the bud is no particular advantage, the method is simpler and gives the inexperienced budder a larger per cent of good buds. The writer has lifted thousands of buds in this manner with the best of success. It is difficult to cut buds in this way from some varieties of cherry and plum trees with thin bark, but it works well on the apple, pear, peach, apricot and the heavy-barked plum. The bud is then slipped into place, as shown in the figure, and well wrapped with raffia or soft wrapping twine. About four wraps below and three above, so spaced as to close the whole opening, is sufficient. In wrapping, the common practice is to start below, and by crossing over the first end and running the last end under, the bud is wrapped without a knot. The tying material is usually cut in the desired lengths beforehand, and if raffia is used, it should be kept moist, as it ties better.

If on healthy young wood, the buds will unite within ten days or two weeks. Then the wrapping should be cut by

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread

## Strawberry Plants

CLARK'S SEEDLING  
THE KIND THAT MADE  
HOOD RIVER FAMOUS

Rates:

100 plants at \$1.25  
1,000 plants at \$5.00  
5,000 to 10,000 plants at  
\$3.00 per thousand

Large orders at special prices

The Quality of our Plants is the Best

F. B. KIMBALL

Successor to E. L. KLEMER  
HOOD RIVER, OREGON

### FOR SALE

Two ranches, 160 acres each, under irrigation ditch in Okanogan County, Washington. All choice fruit land. Terms and particulars of A. M. Dewey, 518 Paulsen Building, Spokane, Washington.

## To the Shrewd Business Man

A commercial orchard is a good income producer while you live, the best real estate agent you ever had when you are ready to sell, and a valuable asset to leave to your widow and orphans when you have reached the end of life's journey.

If an old reliable nursery is of any specific importance to the prospective planter, we kindly ask you to consider with us before buying your trees.

## Albany Nurseries

(Inc.)

ALBANY, OREGON

### 12 APPLE TREES \$1.00

By mail postpaid. We have all the leading varieties. If not perfectly satisfied with the trees, your money cheerfully refunded. Send for prices on nursery stock. Parker Nurseries, Fayetteville, Arkansas.

## Quality and Quantity Leave no Question as to Quotation

On our complete line of

FRUIT TREES  
ORNAMENTAL TREES  
AND SHRUBBERY

Salesmen wanted

Capital City Nursery Company  
Salem, Oregon

drawing a knife across it on the side of the stock opposite the bud. Should the stock be making a slow growth, there need be no hurry about cutting the tie. The only thing to be guarded against is that the wrap does not cut into the bark. This pressure interferes with the flow of sap and tends to throw the bud into premature growth; this often means a loss of the September bud. The bud set in August and September should remain dormant over winter. The following spring, just as soon as the buds on the top of the stock begin to push out, the original top of the stock is cut away. Should the stock be cut off too early in the spring, or too close, there is danger of the stub drying out to the injury of the bud. Some recommend the practice of leaving a longer stub to which the young growing shoot from the bud may be tied until it is well established. This saves some buds from being blown out, but necessitates a second cutting in mid-summer to allow the stub to heal over.

We have said that buds for fall budding should be taken from the current year's growth. The common practice is to cut the terminal growth from bearing trees. The leaves are trimmed off at once, leaving a small part of the leaf-stalk to handle the bud by. Bud-sticks trimmed in this way may be stored in a cool, damp place and kept for some time without injury. The leaf-stalks, however, will loosen and drop off in many cases if stored over ten days. Of course this does no harm, but some bud-ders miss the little handle in inserting the bud. The first few buds at the base of the stick are generally poorly developed and should be discarded, while those near the tip are too immature to be used. As a rule not over half of the new growth cut in early September will carry buds suitable for budding. The sticks should be carried in a damp cloth to avoid drying out.

♦ ♦ ♦  
"The college staff of the Oregon Agricultural College do all in their power to give the students the greatest amount of practical information in the shortest possible time."

Signed David Gellatly, Gellatly, B. C.

♦ ♦ ♦  
Don't waste your own good years trying to solve problems that other men have already solved. Think it over. Attend the Winter Short Course at the Oregon Agricultural College, January 3 to February 17.

### BUSINESS OPPORTUNITY

An investment of \$40,000 in 6% gold bonds will control a salaried office position worth \$3,000 per year, and carry with it an opportunity to make, without additional investment, not less than \$25,000 within two years. Bonds secured by water rights, ditch rights and land contracts worth ten times the amount of bond issue. Particulars of O. N. Suksdorf, 518 Paulsen Building, Spokane, Washington.

We Have 100,000

### Burkhart Blackcap Roots for Sale

Send your orders now for spring delivery. 10,000 lot, \$22.50 per M.; 5,000 lot, \$25.00 per M.; 3,000 lot, \$27.50 per M.; 1,000 lot, \$30.00 per M.

F. K. Eddy & Son, Meadow Lake, Washington

### Editor Better Fruit:

Enclosed please find check to cover our advertisement for the month of December. We wish to say at this time that we have received more beneficial results from our advertising in "Better Fruit" than all other mediums combined, and we have used not a few. Enclosed please find copy for the next issue.—Yours very truly, Oregon Apple Orchards Co., Portland.

### Editor Better Fruit:

Enclosed please find draft for \$1.00 to pay my subscription for "Better Fruit" another year. I want to congratulate you on the success you have made with your paper, each issue we are able to get something that well repays us for our investment in your paper.

Wishing you the success you merit, I am, yours very truly, H. H. Younger, Palisade, Colorado.

## GERMAN NURSERIES' SPECIAL OFFERS

I established the German Nurseries and Seed House 25 years ago. Steady growth of business—thousands of satisfied customers in every part of the country—testify to the success of the modest start I made in 1886. I will celebrate this anniversary with some special offers of

**TREES AND SEEDS THAT GROW.**

Especially fine, complete line of fruit trees, Western varieties; berry bushes, grape vines, bulbs, seeds for the farm, the vegetable and flower garden. Write today for beautiful new 136-page Anniversary Catalogue, free, showing Anniversary Collections at saving prices.

**CARL SONDEREGGER**  
GERMAN NURSERIES & SEED HOUSE  
Box 217 Beatrice, Neb.

## TWENTY-FIFTH ANNIVERSARY

### Free Tax Industrial Alcohol

Corn stalks and cobs, waste vegetables and wood waste, shavings and old saw dust are now converted into industrial alcohol at 10 cents per gallon; sells for 50 cents. Solidified alcohol in chunks or cubes \$1.00 per can postpaid. Unlimited demand in every village for motors, automobiles, cooking stoves, etc. A 5-gallon apparatus makes 1 gallon per hour; is simple as a corn mill, almost automatic, inexpensive, pays for itself every month. No tax, no licenses, only a permit, and that is free. Orders come in fast. Write today for FREE FARMERS' CIRCULAR No. 9.

A HAND BOOK on fermenting, distilling and denaturing alcohol from farm products and wood waste. Trade secrets, no licenses, only a permit, and that is furnished free. Red tape removed, INCLUDING FREE TAX DENATURING ALCOHOL LAWS. A plain statement of facts for those interested. The latest just out, 280 pages, 60 illustrations, 10 Mo. cloth. Price: \$1.20 postpaid.

Address

**The Wood Waste Distilleries Co.**  
(INC.)

Wheeling, W. Va., U. S. A.

### WE HAVE THE FOLLOWING TREES UNSOLD TO DATE

These are all good, clean, strong, exceptionally well-rooted one-year-old trees. All budded or grafted from the best bearing trees in the Wenatchee Valley. Will be pleased to book your order for what you will need for spring planting.

Winesap, 8,340	W. W. Pearmain, 145
Rome Beauty, 2,800	Winter Banana, 695
Delicious, 5,500	Yellow Newtown, 160
Jonathan, 4,120	McIntosh Red, 385
Stay. Winesap, 2,000	Y. Transparent, 50
Grimes' Golden, 530	Spitzenberg, 3,830
Champion, 625	King David, 550
Ben Davis, 250	Carolina Poplar, 200
Transcendent, 85	Bartlett Pear, 2-year, 800

We also have the following scions cut from bearing trees in the Wenatchee Valley in our cellar to offer, which can be shipped on short notice.

15,000 Delicious Scions	10,000 Winesap Scions
16,000 Jonathan Scions	10,000 Spitzenberg Scions

### The Cashmere Nurseries

Located in the Wenatchee Valley

G. A. LOUDENBACK, Prop. Cashmere, Wash.

## READY to MAIL

## 1911 CATALOG

of **LILLY'S**

# SEEDS

Your 1911 crop depends on Good Seed. Lilly's Seeds are tested, proven Best for the West—for over 21 years the leading Pacific Coast Seeds. Ask for Catalog No. 32

Chas. H. Lilly Co., Seattle, Wash.



**Y**OU don't stop engine, horses, men; waste time, liquid, patience, to clean Nesbars; simply press the coil and spindle crush, and pin forces lime sediment through cap. Continue spraying, not tinkering. Circular? Postal, Nesbar Nozzle Co., Dept. O, Elmira, New York.

### WHEN ARE YOU COMING WEST?

Fortunes are being made now by hundreds on small fruit ranches in the West. If you are interested in the famous fruit section about Hood River, Ashland, Medford and other equally famous sections, send in the attached coupon. It's the soil, climate, and scientific culture that makes Oregon and Washington apples famous.

The Pacific Monthly Company,  
Portland, Oregon.

Enclosed is 25 cents, for which please send me three recent numbers about famous fruit sections of the West.

Name.....

BF Address.....

### NURSERY SALESMEN

Drop us a line for information regarding our splendid proposition.

Big commissions paid weekly.

OUTFIT FREE

**SALEM NURSERY COMPANY**  
SALEM, OREGON

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

**TRUE-TO-NAME NURSERY**

Phone 2002K

Hood River, Oregon

## We Raise the Big Red Apples

I have land for sale in the beautiful Mosier Hills, just six miles east of the town of Hood River, Oregon.

I have the exclusive sale of the East Hood River Land Company's lands.

Some choice tracts in one to three-year-old orchard.

I have had fifteen years' experience in the Mosier district and I have on my list the best buys in this district.

**GEO. CHAMBERLAIN**

Mosier, Oregon

### MANAGER WANTED

For Fruit Growers' Union. Address, giving experience, age and references,

**LEWISTON-CLARKSTON**

**IMPROVEMENT CO.**

CLARKSTON, WASHINGTON

### THE MIRACLE OF WATER

Millions of acres of raw land are being reclaimed in the West by irrigation. Water makes this desert waste the most fruitful land in the world. No magician has wrought such wonders with magic wand. Interested? Send the coupon.

The Pacific Monthly Company,  
Portland, Oregon.

Enclosed find 25 cents, for which please send me three recent numbers telling about the Miracle of Water.

Name.....

BF Address.....

"I am sure if the people of Oregon realized what these Short Courses of the Oregon Agricultural College were they would crowd you out of house and home."

Signed John Ellis, Ft. Klamath.

## FOR SALE

Choice ten-acre tracts Okanogan fruit land. First-class upper bench, near government canal; 1,280 feet altitude. Well water in gravel, thirty feet, pure. Planted to yearling apple trees; best red winter commercial varieties; also tracts not planted. Ready to irrigate. Great Northern Railroad now building in Okanogan Valley. Prices and terms right.

**W. E. KIRKPATRICK**

Epley, Wash. Okanogan County

**THE GOLDEN STREAM.**—A very commendable little booklet of 68 pages, called the "The Golden Stream," has been recently issued by the International Harvester Company of America. This booklet covers a multitude of vital facts relative to the plain, ordinary, every-day cow in a very interesting manner. Such up-to-date topics as "The Dual Purpose Cow," "Bovine Tuberculosis," "How to Make a Babcock Test," "Rations for Dairy Cows," "The Feeding Value of Silage," and "Advantages of Dairy Farming," etc., etc., are discussed. In general, the purpose of the book is to impress the farmer with the proper relation of the cow to our modern civilization as the source of a golden stream of wealth. Numerous illustrations throughout the booklet showing record-making cows and herds of various milking breeds, silos, dairy barns and interiors, etc., greatly enhance the value of the booklet. It will be greatly appreciated, especially by farmers and dairymen. A copy of the booklet may be obtained by writing the company or any one of the various I. H. C. branch houses.

◆ ◆ ◆

**FRUIT GROWING IN ARID REGIONS.**—Edited by Paddock and Whipple and published by D. McMillan & Co., is one of the best books on horticulture in arid regions that we have seen to date. It was written by Professor Paddock and Professor Whipple, and is a result of their work and observation while connected with the Experiment Station in Colorado, where they had splendid opportunities in the orchards on the Western slope to get at the practical side of fruit growing; and when we say their book is practical we have paid it the highest compliment in our power in the horticulture world. Professors Paddock and Whipple have a standing which commands the respect of everyone, and both are men of recognized ability in the fruit world. Fruit growers will find this an excellent text book; in fact it is interesting reading for any fruit grower. The book can be obtained by writing McMillan & Co., 64 Fifth Avenue, New York City.

◆ ◆ ◆

**EVERY FRUIT GROWER** in the Northwest, and every man or woman intending to plant an orchard tract this winter and spring, should not fail to become a subscriber to that superb publication, "Better Fruit," published at Hood River, Oregon. Without any question "Better Fruit" is the best and most carefully edited publication of its sort in the world. It is distinctively Western, and the editor, E. H. Shepherd, has been growing fruit in Oregon for upwards of twenty years, and he knows just what problems and perplexities every fruit grower must encounter and overcome. "Better Fruit" is always splendidly illustrated, and from the printer's viewpoint is a work of art. Every issue is brimful of instruction and helpful suggestions for the orchardist, and a subscription to the magazine will be the means of saving you much time, money and annoyance. Send for it at once. The December number is a hummer. Send \$1 to Better Fruit Publishing Company, Hood River, Oregon, and get the publication at once. Or, if it pleases you, leave your order with The News and we will order "Better Fruit" for you. In either case, *do it now.*—Roseburg News.

◆ ◆ ◆

**CALENDARS FOR 1911.**—For 1911 the International Harvester Company of America has gotten out a set of very attractive calendars, directing attention to the well known lines of harvesting machines—Champion, Deering, McCormick, Milwaukee, Osborne and Plano. These calendars are beautifully lithographed in colors, and are 20x13½ inches in size. The scenes depicted on these calendars include: "The Hunting Camp," with the successful rifleman, who is bringing in a deer; "The Days of '49," when the prairie schooner was a familiar sight west of the Missouri River; "The Prospectors," in search of the elusive gold; "Grandmother Sewing on a Burton;" "The Children Playing With Tige on the Beach;" and "The Summer Girl With Her Parasol." Any one of these calendars would be a decidedly appropriate ornament for the home, and we suggest that you write or call on your local dealer and ask him for an I. H. C. calendar.

# Burbank's New Strawberry THE PATAGONIA

The Most Productive    The Most Delicious  
The King of all Strawberries

*Plants for Sale Now*

*Send Postal for History, Description and Prices*

**LUTHER BURBANK**

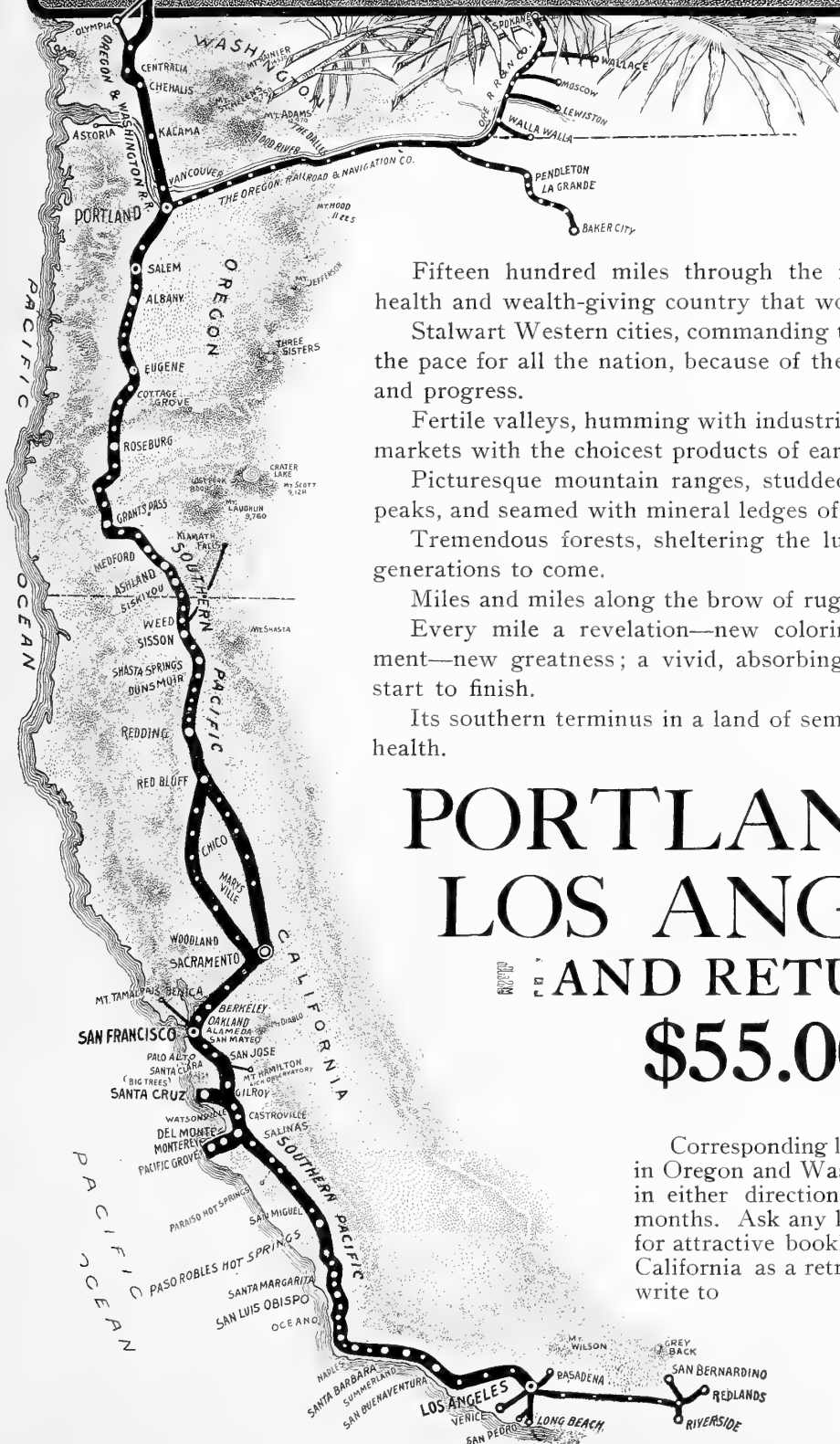
Please Mention this Paper

Santa Rosa, California, U. S. A.



# CALIFORNIA

VIA THE ROAD OF A THOUSAND WONDERS



Fifteen hundred miles through the most inspiring, educational, health and wealth-giving country that wonder-lover can imagine.

Stalwart Western cities, commanding the admiration of and setting the pace for all the nation, because of their vigor, splendid enterprise and progress.

Fertile valleys, humming with industrial life, supplying the world's markets with the choicest products of earth.

Picturesque mountain ranges, studded with famous snow-capped peaks, and seamed with mineral ledges of undreamed-of wealth.

Tremendous forests, sheltering the lumber supply of nations for generations to come.

Miles and miles along the brow of rugged ocean cliffs.

Every mile a revelation—new coloring—new life—new achievement—new greatness; a vivid, absorbing, changeable panorama from start to finish.

Its southern terminus in a land of semi-tropic loveliness, sunshine, health.

## PORTLAND TO LOS ANGELES

AND RETURN

**\$55.00**

Corresponding low fares from all other points in Oregon and Washington. Liberal stop-overs in either direction, with final return limit six months. Ask any local O. R. & N. or S. P. agent for attractive booklets describing the beauties of California as a retreat for pleasure or profit, or write to

WM. McMURRAY  
General Passenger Agent  
PORTLAND, OREGON

## EMMET NURSERY

THE LARGEST NURSERY PLANT IN IDAHO

*OUR SPECIALTIES*  
**PEACHES—CHERRIES—DWARF PEARS**

A fine stock of all standard varieties of Apples, Fruit and Ornamental Trees, suited for the Northwest.

CHARLES P. HARTLEY, Proprietor

EMMETT, IDAHO

### Winfield Nursery, Winfield, Kansas

GROW TREES OF QUALITY

Their new work, Progressive Horticulture, fully illustrated, describes trees of quality in the making

### RUSSELLVILLE NURSERY COMPANY

H. A. Lewis, Proprietor

Montavilla, Oregon

A progressive and up-to-date nursery. A full line of fruit and ornamental trees. Growers of fine nursery stock. Varieties of special merit. Careful and reliable attention given to filling every order with first-class trees and plants. Satisfaction guaranteed. Nursery at Russellville, suburb of Portland. Take Montavilla car. Nursery one mile east of terminus.

### FRUIT GROWERS, YOUR ATTENTION!

Royal Anne, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

MONTE VISTA NURSERY  
SCAPPOOSE, OREGON

## Montana Fruit Growers

AND OTHERS OF HIGH ALTITUDE

WE are now ready to book your orders for fall and spring delivery of McIntosh Red and Wageners. For Northwest fruit growers in general, a full stock of all standard varieties—Spitzenbergs, Jonathans, Winesaps, Rome Beauties, etc., and all other kinds of fruit trees and shrubbery.

THIRTY-ONE YEARS IN BUSINESS

### Milton Nursery Company

A. Miller & Sons, Incorporated

Milton, Oregon

# Malthoid Roofing

The dependability of Malthoid Roofing has been proven by special tests covering a period of many years.

Malthoid will last as long as the building it covers. It is inexpensive, easy to lay, and your roof troubles are over when Malthoid is laid.

Made by THE PARAFFINE PAINT COMPANY

San Francisco and Everywhere

Stewart Hardware & Furniture Co., Agents, Hood River, Oregon

#### IT'S FREE

Send for it.  
A new and valuable book on

#### Cheerful Homes

This booklet is illustrated with pictures of the most beautiful bungalows of Southern California

## THE Sunnyside Nursery Company

Capital paid up, \$100,000

WE HAVE NO AGENTS  
SELL DIRECT

GET our prices and save money. Trees first-class. We lead, others follow. Have several hundred thousand finest peach trees ever grown in the West. Cherry, pear and apple in numbers that foot up millions. If planted in a line would make over three rows, the usual distance of planting, from Seattle to New York city.

WRITE US AND MENTION  
THIS PAPER

Main Office

SUNNYSIDE, WASHINGTON

## Your Spring Order

Should be placed without further delay.

Do not wait until the last minute and then get about half the stock you want. Order now before our supply is broken up or exhausted.

Our spring sale is pretty heavy, but we can still supply you with the following staple varieties:

#### APPLES

Delicious, Grimes' Golden, Jonathan, Rome Beauty, Spitzenberg, Winesap; also many other varieties suitable for home orchard planting.

#### CHERRIES

Bing, Centennial, Early Richmond, Lambert, Late Duke, Olivet, Royal Ann, and others.

#### PRUNES AND PLUMS

Practically all varieties.

#### PEACHES

Carman, Early and Late Crawford, Elberta, Lovell, Muir, Phillips' Cling, etc.

We also have many other varieties not mentioned above, besides a complete line of berries and ornamentals. Better send for our catalog today. It's free. In it you will doubtless find just what you want.

If we are out of any variety we will tell you, so you may try elsewhere. If you want first-class trees, thoroughly matured, free from disease or pest, perfectly hardy and splendidly rooted, then drop us a line. Commercial varieties our specialty.

## YAKIMA VALLEY NURSERY COMPANY

Toppenish, Washington

MORE SALESMEN WANTED

# Seeds

THE KIND YOU CAN'T KEEP IN THE GROUND

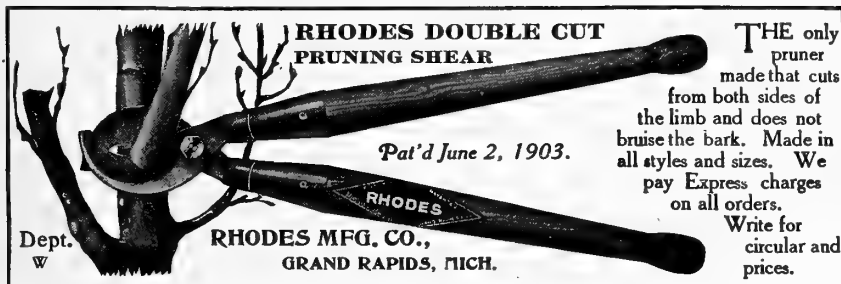
They grow, and are true to name.  
Write for prices on your wants.

188 Front Street

J. J. BUTZER

Portland, Oregon

Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.



**RHODES DOUBLE CUT PRUNING SHEAR**

Pat'd June 2, 1903.

Dept. W

**RHODES MFG. CO., GRAND RAPIDS, MICH.**

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. We pay Express charges on all orders. Write for circular and prices.

## RESOURCES AND OPPORTUNITIES

There is more doing in the West today in the way of progress and development than in any other section of the United States. If you are interested and want further information about opportunities and resources of a vast new empire, use the coupon.

The Pacific Monthly Company,  
Portland, Oregon.

Find enclosed 25 cents, for which please send me three recent numbers containing articles about resources and opportunities in the West.

Name.....

BF Address.....

"If every farmer, fruit grower and stockman in the state would attend the Short Course of the Oregon Agricultural College and then put into practice what he could learn, it would add millions in money to the state as well as increase immensely home comfort and better living on the farm." Signed G. A. Lawson, Shedd's, Oregon.



C. F. WHALEY  
Originator of the  
Ballygreen System  
of Certified  
Pedigreed Trees

## BALLYGREEN SYSTEM OF PEDIGREE TREES

Selected

Certified

Combines the best practices of horticulture with honest, efficient business methods, insures the fruit grower, making it certain that he will get the kind of trees he orders and a very high quality of fruit when the trees bear.

### BALLYGREEN NURSERIES

HANFORD, WASHINGTON



H. W. REAUGH  
Graduate  
in Horticulture  
Washington State  
College  
Field Manager  
Ballygreen Nurseries

A REPUTATION TO SUSTAIN

# The Vineland Nurseries

CLARKSTON, WASHINGTON

Has to offer for Spring Delivery, 1911,  
as complete a line of Nursery Stock  
as can be found in the Northwest

All stock propagated from selected bearing trees.

Experts all over the Pacific Northwest realize that no other nursery exercises greater care than we do, and that

No more reliable stock is grown than we produce.

For fall delivery 1911, and spring delivery 1912, we shall have to offer for the first time the

## RED GRAVENSTEIN

*The New Apple Sensation*

Will tell you more about this wonderful apple, which is purely a fortunate accident of nature, later on.

**THE VINELAND NURSERIES CO.** CLARKSTON WASHINGTON

Owners of The Hanford Nurseries

# MOUNT ARBOR NURSERIES

E. S. WELCH, PROPRIETOR

133 CENTER STREET, SHENANDOAH, IOWA

## A Full Line of General Nursery Stock

**Apple Seedlings**—A surplus of heavy branched roots.

**Apple Grafts**—Piece and whole root made to order.

**Apple**—2 to 3, 3 to 4 and 4 to 5 feet.

**Cherry Trees**—One-year Bing, Lambert, Royal Ann.

**Peaches**

**Currants**

**Concord Grapes**

**Blackberries**

**California Privet**

**Roses**—Splendid stock Hybrid, Perpetual, Moss, Rambler, Climbing.

ORNAMENTAL TREES, SHRUBS, VINES  
AND FOREST TREE SEEDLINGS

## You Want the Best? WE HAVE IT IN TREES

They have the highest possible developed root system. It's the root which counts

Mr. Buyer:

No matter what quantity you may require, let us figure with you on your wants for this season, or send for our price list, and if you entrust your order with us we feel certain of retaining you as a permanent customer.

You will get what you order

## Yakima and Columbia River Nursery Co.

North Yakima, Washington

*Growers of  
Selected Yakima Valley Fruit and Ornamental Nursery Stock*

"NONE BETTER"

Salesmen — A few wanted. Write for terms



## Do Not Buy Arsenate of Lead on Arsenic Contents Alone

As the name implies, 'Arsenate of Lead' is a chemical combination of **Lead** and **Arsenic**, and the **Lead** has an important function in this combination.

It acts as a binder, holding the Arsenic on the foliage, destroying not only the insects on the foliage at the time the poison is applied, but those that put in their appearance later.

It forms a strong chemical union with Arsenic, reducing to the minimum soluble arsenic, which causes foliage injury. When used according to directions it will not injure the most delicate foliage.

GRASSELLI ARSENATE OF LEAD PASTE contains 15 per cent Arsenic Oxide, enough poison to kill, and about 40 per cent Lead Oxide, the maximum amount consistent with good mixing properties.

It complies in all respects with the most rigid requirements of federal and state laws governing the manufacture and sale of Insecticides.

## Grasselli Arsenate of Lead

Kills all Leaf Eating Insects  
Sticks to the Foliage  
Does not Injure the Foliage  
Mixes readily with Water

### DISTRIBUTERS IN THE NORTHWEST:

Wenatchee Produce Co., Wenatchee, Washington  
Inland Seed Co., Spokane, Washington  
Hardie Manufacturing Co., Portland, Oregon  
Samuel Loney & Co., Walla Walla, Washington  
Missoula Drug Co., Missoula, Montana  
Western Hardware & Implement Co., Lewiston, Idaho  
Hood River Apple Growers' Union, Hood River, Oregon  
Carlson-Lusk Hardware Co., Boise, Idaho  
Darrow Bros. Seed & Supply Co., Twin Falls, Idaho  
Rogue River Fruit and Produce Ass'n, Medford, Oregon  
And in all consuming districts

WRITE THE ABOVE, OR OUR ST. PAUL OFFICE FOR  
NEAREST DISTRIBUTER

## The Grasselli Chemical Co.

*Established 1839*

Main Office, Cleveland, Ohio

H. N. LYON, Northwestern Representative

505 Concord Building, Portland, Oregon

St. Paul, Minn.  
Chicago, Ill., 2235 Union Court  
New York City, 60 Wall Street  
St. Louis, Mo., 112 Ferry Street

New Orleans, La.  
Cincinnati, Ohio  
Birmingham, Ala.  
Detroit, Mich.



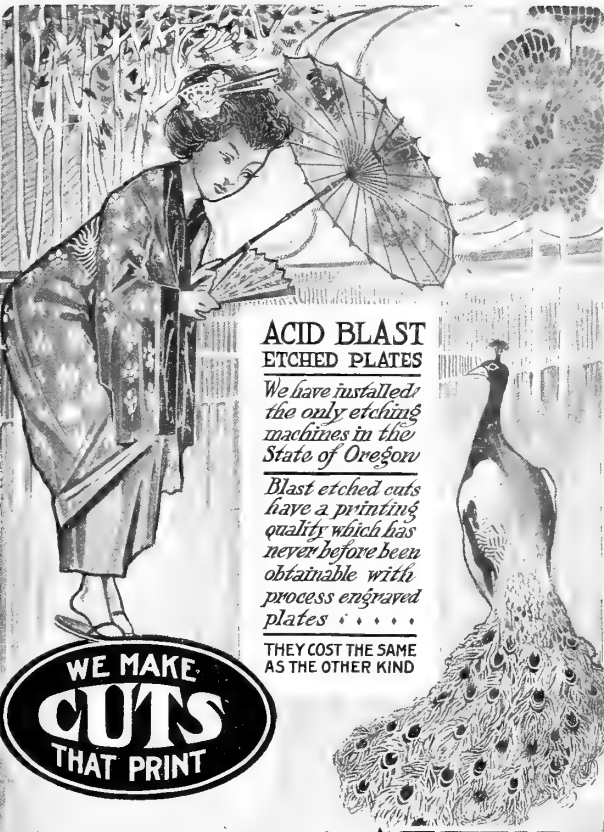
# KELLY'S TREES ARE TRUE TO NAME

## 2,000,000 TREES 2,000,000

For fall and spring planting. 350,000 Winesap, 350,000 Jonathan, 200,000 Rome Beauty, 100,000 Delicious and all other leading varieties in Peach, Pear, Plum and Cherry

*Before Placing Your Order Write to*

Tim Kelly, Proprietor Wapato Nursery, Box 197, Wapato, Washington



**ACID BLAST ETCHED PLATES**  
*We have installed the only etching machines in the State of Oregon*  
*Blast etched cuts have a printing quality which has never before been obtainable with process engraved plates . . . . .*  
**THEY COST THE SAME AS THE OTHER KIND**

**WE MAKE CUTS THAT PRINT**

**HICKS - CHATTEN ENGRAVING CO.**  
 607 BLAKE-McFALL BLDG., PORTLAND, OREGON

# J. W. Baltes & Company

## invite your inquiries for Printing

**SPECIALISTS IN THE ARRANGING AND EXPEDITING OF FINE WORK**

Corner of First and Oak Streets **Portland, Oregon**

# National Irrigation Journal

GOLDEN OPPORTUNITIES IN THE GOLDEN WEST

Edited by Clyde A. Morrison

The leading publication of its kind in the world for the investor, home-seeker, farmer, irrigation companies and agents. Covers the entire subject. Printed on the best grade of paper, with highly embellished cover printed in gold and colors, and a three-color process picture every month illustrative of successful irrigation. Special articles by authorities on irrigation

Published Monthly

One Dollar a Year

NATIONAL IRRIGATION JOURNAL

First National Bank Building, Chicago

# A WARNING!!

"Probably the most important lesson that the orchardists of the Northwest have yet to learn is that cheap nursery trees are an exceedingly dangerous foundation on which to start an orchard—that a few cents economy on such trees at the start is many many dollars' loss in the long run."

Thus spoke one of America's greatest horticulturists on a recent visit to the Northwest. It is a warning that is well merited, for one can visit scarcely any of the newer fruit sections without being appalled by the number of weak, sickly, undersized young trees that stand as incontrovertible proof of his warning.

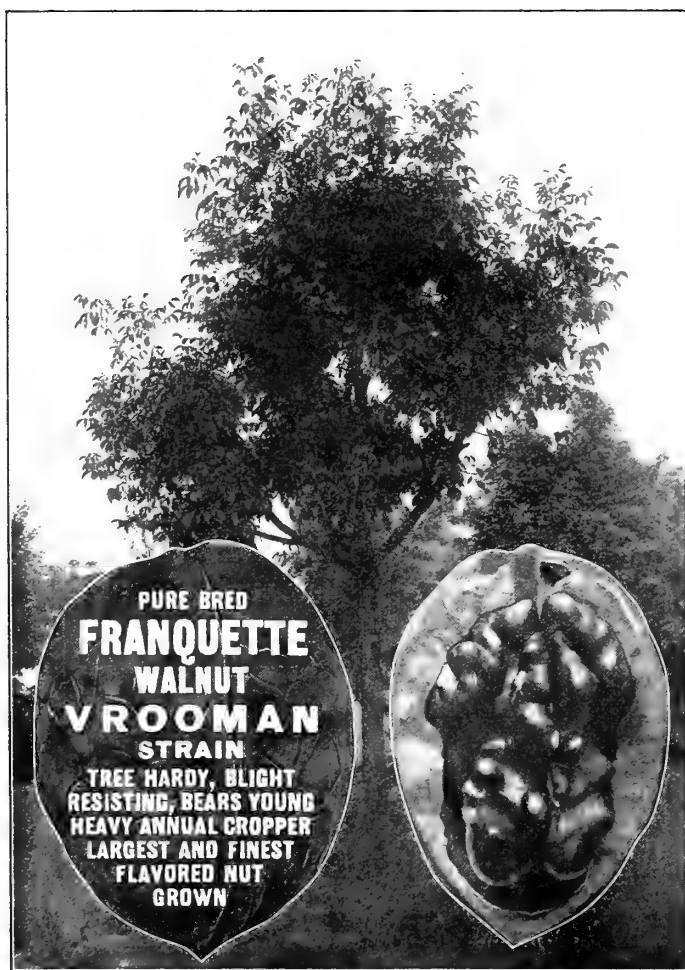
Any man who will plant anything but the strongest, most vigorous, healthiest trees—of **known** ancestry—trees whose breeding for generations past insure prolific bearing and disease resisting qualities is bequeathing a legacy of trouble to posterity. The first cost of a fruit tree is an insignificant cost, but the quality and pedigree of that tree is a powerful, **perpetual** factor to your success and those after you.

All of the nursery trees—apple stocks—of the **Hood River Standard Nursery Co.** have **three-year-old** root systems, with one-year straight tops—big, strong, healthy, vigorous trees that **will grow** when properly planted, and which will bear from one to three years earlier than the so-called "yearling" tree so promiscuously peddled about, and they will cost you little, if any, more. They are all propagated from the highest earning and best trees of the world famous **Hood River Valley**—trees whose ancestry and past performance is a matter of careful record. They are in every sense a **thoroughbred**, pedigreed apple tree.

For the season of 1910-11 we can offer a limited amount of extra size apple only. Write for catalog and price list.

## HOOD RIVER STANDARD NURSERY CO.

HOOD RIVER, OREGON



This view illustrates a black walnut tree, top grafted with the famous Vrooman Pure Strain Franquette.

The hardiest, most prolific, with the richest meat of any walnut grown.

The walnut of all walnuts. Ask for descriptive catalogue.

## Apples—Peaches

If you could see our yearling apple and peach trees, the kind with a three-year-old root, you'd be proud to have them growing on your land.

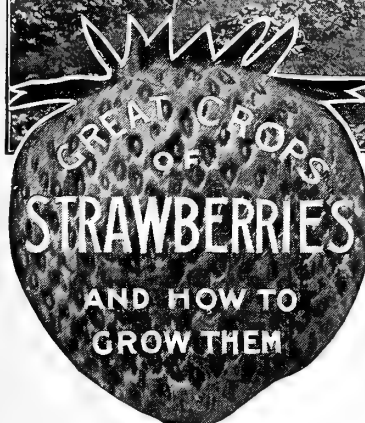
If you are needing any **NEWTOWNS, SPITZENBERGS, JONATHANS, BALDWINs, WINESAPS, GRIMES GOLDEN, ORENCO, ROME BEAUTIES**, or **PEACHES**, such as Early Crawford, Late Crawford, Elberta, Early Charlotte, Muir, Lovells or scores of other good varieties, let us know and we'll furnish you trees you'll be pleased with and be proud of.

Our prices are really low, considering the high grade of trees we give you. Remember, Orenco trees are non-irrigated.

## Oregon Nursery Co.

How'd you like to sell Orenco trees?  
Write for terms.

Orenco, Oregon

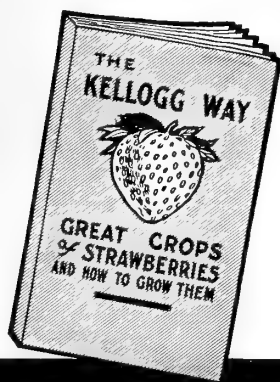


## Your Big Money is in Growing Strawberries

No matter where you live or what kind of soil you have, Kellogg's Way will more than double your profits growing Big Red Strawberries right between your rows of young fruit trees, if you have no other place. You can do it easily. Let us tell you how—we've got it all explained in a nut shell—in our handsomely illustrated 64-page book entitled

### "Great Crops of Strawberries and How to Grow Them"

**Our New Free Book Tells How. Send For It Today.**



It explains why the Kellogg Way of growing big crops of Strawberries is the sure and easy way. Tells how to prepare your soil; what varieties to set; how to care for the plants to get best results; how to market the fruit. Many fruit growers are now making a net profit of \$500 to \$800 per acre each year while waiting for young trees to come into bearing. Besides all this, the cultivating of the plants produces a healthy and more vigorous growth in the trees. Just what the trees require. Whether you have ever thought of growing strawberries or not, it is just the book that should be read by

### Every Fruit Grower and Farmer

What others are doing you can do right in your own soil. C. Harder, Twin Falls, Idaho, is making as high as \$1000 per acre each season growing strawberries between the rows of his young trees. Why don't you? It will more than double your income.

### Kellogg's Thoroughbred Plants

The only strain of plants that are propagated from mother plants of high fruiting power. That's why the Kellogg Strain of Thoroughbreds is so productive and bears such enormous crops of big red berries. They have a record of 15,000 quarts per acre. Large yields are often reported grown in young orchards. If you want to make some easy money, get our 1911 book. IT'S FREE.

**R. M. KELLOGG COMPANY,**

**Box 355**

**Three Rivers, Michigan**

#### Editor Better Fruit:

Realizing the most excellent standing of your publication and its wide circulation among the intelligent and progressive growers of fruit, I solicit space sufficient to call the attention of the fruit industry to some matters of very great importance, at least they so appear to me.

During the season 1910, as manager of the Puyallup and Summer Fruit Growers' Association, I shipped out of the Puyallup Valley about 185 carloads of red raspberries and blackberries, part of which were marketed in Canada. Every crate of berries that was marketed in Canada was subject to a duty of fifty cents, or two cents a pound. The transportation on each crate of these berries was in the neighborhood of seventy-five cents, therefore the fixed charges after the berries left the Puyallup Valley were \$1.25 per crate without any commission to the brokers. This will explain that the consumption of our fruit would, of necessity, be curtailed on account of the high price it must be sold at in order to give the grower any return. I can understand of no

reason why the good people of Canada would not desire to buy their berries fifty cents per crate cheaper than they are now buying them. I am sure that the Puyallup and Summer fruit growers would be pleased to have this duty removed for the selfish reason that their friends in Canada would naturally consume more berries if they could buy them cheaper. What applies to the growers of raspberries and blackberries applies equally to the growers of all deciduous fruits in the three states of Oregon, Idaho and Washington. If it is to the advantage of the raspberry and blackberry growers to have the tariff removed, it is to the same advantage to growers of all other classes of fruit; it is of equal importance to the transportation lines for the good reason that if we can now market in Canada 10,000 crates of berries per year under a tariff of fifty cents per crate, we could probably double the consumption several times if there was no tariff.

I can understand of no harm to either the producer or the consumer should this tariff be wiped out. If this is true, why should it not be advisable for every grower, every shipper, every commercial organization and all other interested parties to take this matter up with their members of Congress with a view of getting the fruit tariff removed.

There is now a commission acting in behalf of the United States and Canada, who have this subject under consideration. By a combined effort we can point out to this commission the advisability of the change in the tariff suggested herein.

There is another reason why the Northwestern states mentioned should be interested in this matter. We have a barrier on the west in the Pacific Ocean. We have a barrier on the north in the Canadian line. If Washington, Idaho and Oregon expect to be successful states they must find a market for some part of their products in foreign territory, meaning other states than our

own. Of necessity we are compelled to send considerable of our money to other states to get articles for our use that we do not produce at home. In order to have money to do this we must, of necessity, market in other states a percentage of that which we produce in order to have the money to purchase that which we do not produce. There is a day coming when our timber will not enable us to bring in all the money we will require. Before that time arrives we should endeavor to establish our business relations and business conditions in such manner as will enable us to be a success. I believe that one of the things we should do is to endeavor to remove the barrier north of us, which will enable us to get into a fast growing country that will always be a consumer of more fruits and vegetables than they will produce.

We must also find a market for our cheaper products of fruit and vegetables which can only be marketed in cans; but this is another story, which I will be glad to ask you to find space for at another time. Very respectfully, W. H. Paulhamus, Puyallup, Washington.

## J. F. LITTOOY

CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## Grow the Loganberry

One of the most prolific and profitable berries grown. Plants at \$10.00 per M.

**ASPINWALL BROS.**

**BROOKS, OREGON**

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

# The Stark Year Book

## For 1911

**V**OLUME II of The Stark Year Book (published annually) is nearing completion and will be ready for mailing January 15. Because of the limited edition and its high cost, copies will be sent only to those who apply for it on the coupon printed elsewhere on this page.

The Stark Year Book for 1911 is best described briefly—it is an encyclopedia of latest horticultural information, fully illustrated both in color and in black.

While issued in our interests and the nursery products grown by us, The Stark Year Book covers a greater field and is much wider in scope than the ordinary nurseryman's catalogue, since it deals with the subject of horticulture from the viewpoint of those who are engaged in fruit-growing commercially or for home orchard purposes.

Within its covers are twenty-three full page illustrations of fruits and flowers in natural color, representing one hundred and thirteen varieties and covering apple, cherry, pear, peach, plum, grape, small fruits, and roses.

Eighty pages are devoted to descriptions, records of varieties, and the opinions of the country's most successful orchardists and scientific horticulturists. These eighty pages are profusely illustrated from photographs having a direct bearing on the subject matter.

Practical information covering the many problems of tree culture and orchard care is scattered throughout the pages of this book—information representing the meat of the experience and research work of the country's most successful orchardists and best known horticulturists. This feature of The Stark Year Book may be considered authoritative, and accepted as a safe guide.

**Stark Bro's Nurseries & Orchards Co.**

Louisiana, Missouri, U. S. A.

Gentlemen—Kindly forward me Volume II of the Stark Year Book, for which I enclose 10 cents in stamps to pay postage.

Name .....

Postoffice .....

County....., State.....

I expect to plant.....trees about.....  
(Number) (Fill in date)

The planting will be done at.....  
(Give location, both town and state)

Anyone interested in fruit or flower culture will find Volume II. of the Stark Year Book of inestimable value; a book to be kept for frequent reference, and one that will adorn the library table of any home. Those persons possessing a copy of Volume I. (1910) should not fail to apply immediately for Volume II. that their file may be kept complete.

The Stark Year Book for 1911 will be sent to any interested person on receipt of the coupon properly filled in. Postage, 10 cents.

**Stark Bro's  
Nurseries & Orchards Co.**

Louisiana, Missouri



## Columbia and Okanogan Nursery Company

Wenatchee, Washington

PROPAGATORS AND GROWERS OF

The Cleanest, Thriftiest, Best Rooted Nursery Stock in the  
**WORLD**

WHOLESALE AND RETAIL

SEND US YOUR ORDER

Supplying Large Commercial Orchards a Specialty

## QUAKER NURSERIES

We have a large stock of YELLOW NEWTOWN PIPPINS, SPITZENBERGS, JONATHANS, WAGENERS, ROME BEAUTIES, and all of the leading varieties of apples.

We also carry a heavy line of BARTLETT, COMICE and BEURRE D'ANJOU PEARS.

A general stock of peaches, such as EARLY CRAWFORDS, ELBERTAS, LATE CRAWFORDS, FOSTERS, TUSCAN CLINGS, PHILLIPS, MUIR, EARLY COLUMBIA, Etc.

Small fruits in great abundance, STRAWBERRIES, BLACKBERRIES, RASPBERRIES, DEWBERRIES, GOOSEBERRIES, CURRANTS, GRAPES.

H. B. PATTERSON, MEDFORD, OREGON,  
Special Selling Agent for Southern Oregon.

C. F. LANSING, Salem, Oregon

## NURSERY CATALOG

New, handsome, instructive, up-to-date, describing

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

Free on request. Write now, mentioning this paper.

J. B. PILKINGTON, Nurseryman, Portland, Oregon

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

Will have for fall delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDÉ, Nurseryman

H. S. BUTTERFIELD, President

## Hawkeye Tree Protectors



Give dollars worth of protection at a fraction of a cent cost. Don't take a chance with your young trees. One rabbit will kill many in a single night. Protect yours with Hawkeye, the protector that rabbits, mice and other tree gnawers can't gnaw through—the protector that protects against cut worms and prevents trees becoming skinned or bruised by cultivator or lawn mower.

Hawkeye tree protectors are elm veneer chemically treated. They are easily applied to the trees and will last until the tree is beyond the need of protection.

The value of one tree is more than all the Hawkeye tree protectors you need will cost you. Send us your order before some of your trees are killed—you'll regret it if you wait until too late.

Price in lots of 100..... 1 cent apiece  
Price in lots of 1000..... ¼ cent apiece

**Burlington Basket Company**  
118 Main Street, Burlington, Iowa

G. M. WESTLAND, Wenatchee, Wash.  
State Agent for Washington.

**Wanted—One Prominent Nurseryman**  
To act as exclusive agent in each state of the Union. To such we will make prices and terms that will make the Hawkeye Tree Protector a profitable proposition. Our agents' names will appear in our ads. in all the prominent fruit growers' papers. There is money in it for you. Write us at once. Burlington Basket Co., Burlington, Iowa.

## CLARK'S CUTAWAY TOOLS

### LESS WORK

Drawn by two medium horses.

Will cut 28 by 30 acres or double-cut 15 acres in a day.

Will move 15,000 tons of earth one foot in a day.

Runs true in line of draft and keeps the surface true. All other Disk Harrows have to run in the half lap.

Has improved reinforced main frame, and improved standards.

Don't be deceived by poor imitations or infringements.

There's only one original "Cutaway" and it's Clark's.

Saves time. Saves labor.  
Saves money.

### BIG CROPS

Crops increased 25% to 50%.  
Better Grain, better Hay, better Fruit.

Takes place of Plow and Harrow.

Jointed Pole takes all the weight off the horses' necks.

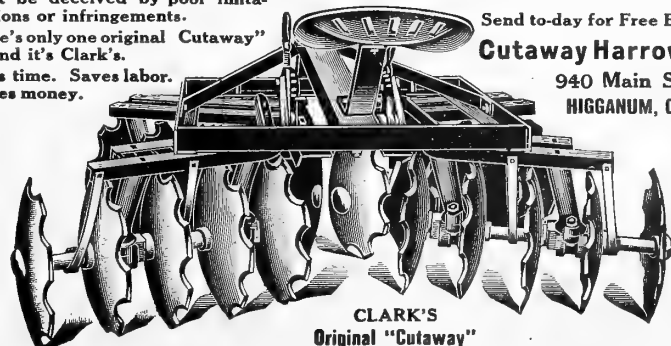
We make 120 sizes and styles of Disk Tools. Every machine fully warranted.

Thousands in use and giving satisfaction. If your dealer won't supply you, we will.

Send to-day for Free Booklet.

**Cutaway Harrow Co.**

940 Main Street  
HIGGANUM, CONN.



CLARK'S  
Original "Cutaway"

Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon



## Simplex Self-Balancing Link Blade Cream Separators

Have you seen the 1910 Model Simplex? Note the solid, heavy frame and the convenient height of both the supply can and the crank. This machine is the result of years of experimental work and has the best features of the 1909 Separator (the Link Blade skimming device, which has been tried and proved its worth as is shown by numerous attempts to imitate, showing that other manufacturers appreciate the skimming qualities of the LINK BLADES and the self-balancing bowl), together with the new low-down supply can and extra heavy base and the ease of running.

The self-balancing feature has been on the market for about two years, and is a perfect success. It does away with the old style mechanically balanced bowl, which had to be sent to the factory to be rebalanced. The ease of running in this machine is not equalled. Note the large skimming capacities relative to prices shown in table:

No.	Capacity per hour	Price
5.....	500 lbs.	\$ 75.00
7.....	700 lbs.	80.00
9.....	900 lbs.	90.00
11.....	1,100 lbs.	100.00

### MONROE & CRISELL

General Agents

Complete Line of Dairy Machinery and Supplies

145 Front Street, Portland, Oregon



guarantee of the intelligent and scrupulous handling of the fruit growers' interests.

President, R. H. Parsons (vice-president Rogue River Fruit and Produce Association), Medford, Oregon.

First vice-president, M. Horan (president North Central Washington Development League, treasurer Washington State Horticultural Society), Wenatchee, Washington.

Second vice-president, W. N. Irish (president Yakima County Horticultural Union), North Yakima, Washington.

Secretary, C. R. Dorland, Portland, Oregon.

Treasurer and general manager, W. F. Gwin (secretary and treasurer Kenmar Orchard Company), Portland, Oregon.

Directors: R. H. Parsons, M. Horan, W. N. Irish, W. F. Gwin, Hon. Fremont Wood (judge of Third Judicial District of Idaho, president Boise Valley Fruit Growers' Association), Boise, Idaho; William M. Richards (until recently vice-president Yakima County Horticultural Union), North Yakima, Washington; A. C. Randall (president Talent Orchard Company), Talent, Oregon; H. M. Gilbert (president Richey & Gilbert Company), Tappanish, Washington; J. S. Evans.

The policies of the exchange and its entire operations are governed absolutely by the board of directors. The exchange is virtually a federation of growers, managed and controlled by the leading men in the industry. The exchange is incorporated for \$100,000, and is amply capitalized for its present requirements.

Mr. W. F. Gwin, general manager, has had wide experience in the marketing end of the fruit and vegetable business, having been associated with a number of the largest fruit distributors in the country in the capacity of sales manager; hence he has acquired an intimate knowledge of the requirements of various markets and buyers throughout the country, a most essential feature in the realizing of top values for specific grades and varieties of Northwestern fruit.

It has been proven in the fruit business that the only way to effect a wide distribution with right results is through a branch house system, under salaried managers, and right here the organizers of the exchange have discovered what is perhaps the greatest natural obstacle in the way of a really efficient marketing organization handling Northwestern fruits exclusively, for it must be remembered that our shipping season covers less than six months, the balance of the year being inactive. How to overcome this handicap without abandoning the very strong feature of the district sales office system was a "facer." However, the idea was conceived that there must be producing districts in other parts of the country, also with a limited shipping season, but opposite to our own, and that by joining hands with fruit growers in those districts sufficient non-competitive and non-conflicting business could be assured to provide steady employment for a large number of high-class salesmen, thereby providing strictly modern, permanent, efficient selling organization covering every district of the United States and Canada, without periods of idleness and without waste, in touch with the trade and its changing conditions the year around, and yet embracing the vitally important feature of economy, the different industries contributing proportionately in the support of the sales forces. The exchange

### WHY PAY FREIGHT ON WATER?

BUY

## Vreeland's Electro Arsenate of Lead IN POWDERED FORM

The most effective and economical insecticide for all leaf-eating insects. Electro is the only successful powdered Arsenate of Lead because it is the only one that mixes instantly with water in such a finely divided state that every drop of spray contains the right amount of arsenic. It cannot be washed off by rain, and will not injure the newest, tenderest foliage.

We guarantee it to contain 30 per cent arsenic oxide—50 per cent more than other brands—as proved by Connecticut and New Jersey Agricultural Experiment Station tests. Write us for them. Save the freight on water—there is 40 to 60 per cent in all pastes. Put in the water at home.

We also have the best paste on the market, and will prove it if you prefer Arsenate of Lead in this form.

Write us if your dealer cannot supply you with Electro brands. Do not accept substitutes.

CHAS. H. LILLY & CO., General Distributors, Seattle and Portland  
(Agents in all principal districts)

Manufactured by VREELAND CHEMICAL CO., 50 A Church Street, New York City

## Oregon Agricultural College

### WINTER SHORT COURSES

January 3 to February 17

Six weeks of intensive, practical instruction in each of the following courses:

Agronomy

Animal Husbandry

Dairy Husbandry

Poultry Husbandry

Horticulture

Domestic Science and Art

Mechanic Arts

Commerce

More than 400 men and women attended these courses last year. For further information address The Registrar, Corvallis, Oregon.

## Free guide to lighter work.

The Planet Jr 1911 illustrated catalogue is a complete guide to lighter farm work, better crops, and more money. Every farmer and gardener should possess it as soon as the mail can bring it. What's the sense of drudging when you don't have to? Write today, and let this free book help you select the labor-saving implements you need.

S L Allen & Co Box 1106 U Phila Pa

[No. 11] Planet Jr Double-Wheel

Hoe has an important improvement for 1911—a steel-frame, making it practically indestructible. Adapted to many kinds of work. Pays for itself in a single season.



[No. 4]

Planet Jr Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator, and Plow is a real necessity in every good garden. Can be adjusted in a moment to sow all garden seeds, hoe, cultivate, weed, and plow.



does not believe any other plan would have been found practical. The idea was followed out with entire success. District sales offices have already been established by the exchange in various parts of the country, and this list is being steadily increased to meet the requirements of the business. In addition to these district offices, a number of traveling salesmen have aggressively canvassed new territory, and the exchange has established direct trading relations with a number of buyers and markets never previously purchasers of carloads of Northwestern fruit. The exchange is equipped throughout in an up-to-date manner and its various employees are thoroughly versed in their line. As far as possible the policy of the exchange is to sell everything on a basis f. o. b. shipping point and specialize in the placing of orders in advance of shipment with the fancy fruit trade of this country and abroad.

The Northwestern Fruit Exchange, being the central selling organization of the various associations and growers' organizations of the Northwest, must depend on these organizations to perfect their methods of production, grading and packing. A proper organization at shipping point is of the most vital importance to the successful operation of the entire system.

The local associations, by giving the exchange advance information as to prospective shipments, grades, varieties, etc., will enable the exchange to place this fruit comprehensively before the entire buying trade of this country and abroad. As far as possible orders will be booked in advance of shipment. In this way the most desirable trade is reached.

The exchange takes charge of the fruit from the time it is loaded into the cars and delivered to the railroad company. If not already placed on advance orders, a description of the fruit goes out by wire from the exchange to its district sales offices, who offer the fruit for sale at a given price f. o. b. shipping point. In the case of fruit which is of desirable variety, quality, etc., there is usually no difficulty, under normal market conditions, to readily effect a sale at a price f. o. b. In the event market conditions are such as to make a satisfactory immediate sale impossible, cars are billed to the exchange at some Middle Western freight gateway, such as Minneapolis, Omaha or Chicago, and during the period of transit to that point the entire sales organization exercises its efforts in placing to the best advantage.

Throughout the entire operation it is readily seen that with an organized sales force the exchange is at all times in a position superior to that of any local company or individual lacking close touch with markets, supplies and values. Entirely unlike the old commission plan of handling, the exchange handles the market situation with absolute impartiality, the sole object being the net result to the grower.

All matters pertaining to traffic, claims, or requiring legal attention are handled by a thoroughly organized department.

To keep pace with increased production, Northwestern fruit must be aggressively advertised and the consuming demand greatly broadened. The exchange is conducting and planning a vigorous campaign along this line, with special literature embodying unique and strictly modern methods of publicity. It is the firm purpose of the exchange to throw the weight of its influence towards the development of Northwestern fruits and the



## Rapid Lighter

Price \$4.00

For use in lighting smudge pots in orchard heating. Almost indispensable when fuel oil is used. It is a tremendous saving of time when time is valuable; also of material. For description, address JOHN STEEL, Ramage Building, Omaha, Nebraska.

## UP-TO-THE-MINUTE SPRAYING SPECIALTIES.



A new Bordeaux nozzle that cannot catch on limbs and throws a clean-cut spray; no ragged edges. An angle-crook that directs spray any angle. A round-spray nozzle that throws a solid cone instead of a hollow one and hits the center, not all around it. Special introductory price to growers. Agents wanted.

**CROWN SPECIALTY CO.**

LOCK BOX, 297. CHICAGO

Every American Planter knows that

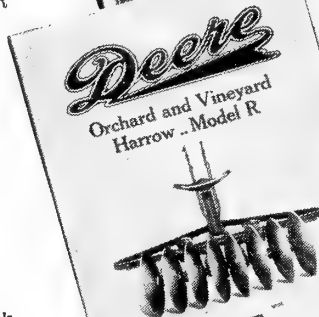
# Burpee's Seeds Grow!

**B**UT—do YOU know *why* they are the Best Seeds that can be grown for planting in 1911? Our address is **W. ATLEE BURPEE & CO., Burpee Buildings, Philadelphia.** Send us *your address*, and we shall mail, without cost, a copy of **THE LEADING AMERICAN SEED CATALOG FOR 1911**, a bright New Book of 174 pages that tells The Plain Truth About **THE BURPEE-QUALITY SEEDS.**

Book  
46-B



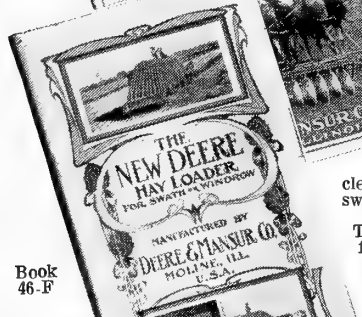
Book  
46-R



Book  
46-C



Book  
46-D



Book  
46-F



## Improved Machinery and Methods Increase Profits

Any or all of these booklets sent **FREE**  
Please ask for the books by number

### ALFALFA

Its Seeding, Culture and Curing, by one of the highest authorities in Kansas, the greatest Alfalfa State, is full of practical information about this new and important crop.

Get posted on this interesting subject.

### A BRAND NEW ORCHARD HARROW

The **DEERE MODEL R** Orchard Harrow is making a hit with Orchardists everywhere.

Made in 4, 5 and 6-foot sizes, with or without extension frame; extreme width extended 12 feet. Shields for protecting low growing branches; double angling levers give instant control of disc gangs.

Very readily adjustable from in-throw to out-throw or visa versa. This harrow is built especially to meet the conditions in the Northwest.

You'll like the work of this harrow.

### DISC HARROWS

The Disc Harrow is the most necessary tool on the farm today. The advantages of thorough discing are just beginning to be understood.

The **DEERE MODEL B** Disc Harrows control the gangs and force them into the ground by a spring pressure, thereby securing the most even and thorough penetration and cultivation.

Whether you buy a disc harrow or not this year, it will pay you to read up all the new features of the **DEERE** line of harrows and the **MODEL B** in particular.

**REMEMBER**, it is the only spring-pressure harrow made and spring-pressure control insures more perfect work.

### BETTER HAY

If you have ten or more acres of hay you will be interested in the New Deere Hay Loader.

The Loader that lasts a lifetime; that has absolutely the lightest draft of its width; delivers the hay at the highest point; rakes absolutely clean without gathering trash; will handle the hay in swaths, windrows of any size, or bunches.

The New Deere couples automatically and unhitches from the load and has many other exclusive and valuable features. **ALL IN THE BOOK.**

### FARMERS' POCKET LEDGER

The Farmers' Pocket Ledger is a new, durable and handsome memorandum book which contains lots of practical information and has plenty of room for recording important transactions. The most popular little book of its kind.

Please ask for books by number

Address

**DEERE & MANSUR CO.**

Moline, Illinois

Northwest, and its spirit will ever be one of co-operation with the various institutions whose interests are of the Northwest.

The following is a list of the associations which are at the present time identified with the exchange: Ashland Fruit and Produce Association, Ashland, Oregon; The Dalles Fruit Growers' Association; Yakima County Horticultural Union, North Yakima, Washington; Cashmere Fruit Growers' Union, Cashmere, Washington; Stevens County Fruit Growers' Union, Meyers Falls, Washington; Caldwell Fruit Growers and Producers' Association, Caldwell, Idaho; Council Valley Fruit Growers' Association, Council, Idaho; Dryden Fruit Growers' Union, Dryden, Washington; Richey & Gilbert Company, Toppenish, Washington; Manville Fruit Company, Boise, Idaho; Evergreen Fruit Growers' Association, Kiesel, Washington.

Applications are being received from a number of other associations, and as the exchange principles become better known the list of membership will be largely increased.

The interdependence of the fruit growers of the Northwest must be clearly recognized, and the exchange gives the best expression of this spirit.

The independence and the distinct identity of each section is recognized and preserved. No association need be at all apprehensive on this point. The exchange fosters the organization of local associations where they are needed and desires the co-operation of those associations that already exist.

The fruit of each district is given distinct prominence according to its qualities, and is intelligently placed before the entire trade strictly on its merits.

## Wanted—An Experienced Horticulturist

To take charge of a 1,000-acre apple orchard in Bitter Root Valley, Montana. Write 216 Endicott Building, St. Paul, Minnesota.

As additional membership is added to the exchange and new districts become identified with this work, it will be expected and provided that proper representation may be had in the management of its affairs.

The California Fruit Growers' Exchange is frequently cited as an illustration of what can be accomplished in the organization of a great fruit industry, and very justly so, but it must be remembered that the success of the California exchange is founded on radically different conditions than those which confront us. First of all, California oranges are shipped every month in the year, which makes it possible to maintain a permanent sales organization without outside assistance. What is even more important, the California Fruit Growers' Exchange is composed of a number of highly organized units, local shipping districts being thoroughly organized and equipped and operated under competent management; the local unions in turn are centralized in sub-exchanges, which are again centralized in the

## RICHARDSON Orchard Heater

Burns Perfectly crude oil, fuel oil, distillate oil or heavy residuum.

Never Fails to Burn during high winds or snow storms.

Economical Consumption of Oil, regulated according to the temperature to be controlled. Simple and effective.

The Hot Burner keeps up a continuous combustion as the oil drops, and with the oxygen of the air rushing to the burner, consumes everything and makes the greatest amount of heat and smoke possible.

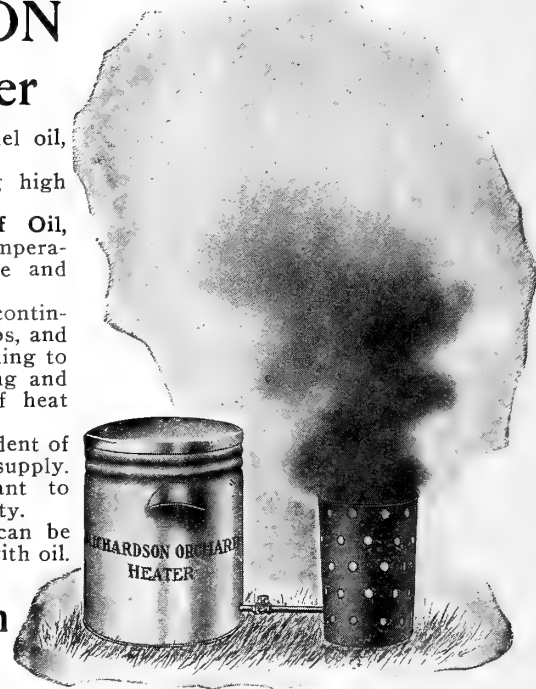
Large Oil Reservoir, independent of burner, will give a season's oil supply. Always ready. Very important to have each Heater ready for duty.

Emergency—Coal or wood can be burned alone or in connection with oil.

(Patent pending)

**Geo. C. Richardson**

1200 East Eleventh Street  
KANSAS CITY, MISSOURI



## The Deming "Victor" Power Sprayer —a New, Good Machine for 1911

This is a light, compact and powerful machine—pump and engine, combined, weigh less than 400 pounds. The engine is of the marine type —3 h.p.—and will develop 150 to 200 pounds pressure.

The pump is of the triplex type; it has three plungers, one of which is always on the down-stroke, so the discharge is always uniform—no pulsating nor "jumping" of the spray. Only a small air chamber is needed, thus avoiding useless weight. Every outfit is carefully tested. Get Deming Nozzles for your spraying this year—we make 7 styles, of which the "Bordeaux" and "Demorel" are particularly good.

**Order Deming Outfits From Your Dealer  
Handsome New Catalogue Free**

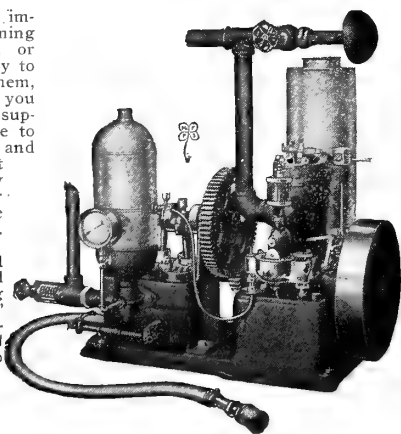
Most good hardware and implement dealers handle Deming Spray Pumps and Nozzles, or will get them for you. Apply to yours; if he doesn't carry them, write to us, and we will tell you where you can buy, or will supply you direct. But be sure to get Deming outfits—the best and one of the oldest and most widely used lines of Spray Pumps in the field. Our handsome new Catalogue free at your dealer's or on request.

First prizes were awarded Deming "Century" Barrel Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910.

**CRANE CO.**

Pacific Coast Agents  
Portland, Seattle, Spokane, San Francisco

THE DEMING COMPANY, Manufacturers of Pumps for All Uses  
870 Depot Street, Salem, Ohio  
Distributing Agencies in Principal Cities



## HEMINGWAY'S Arsenate of Lead

A PERFECT PRODUCT  
PROPERLY PACKED  
HONESTLY PRICED

Guaranteed to meet the requirements of the various  
State Agricultural Authorities

HEMINGWAY'S PURE LEAD ARSENATE is guaranteed to show the following analysis:

Arsenic oxide .....	15%
Lead oxide, about .....	32%
Soluble arsenic, under .....	1½%

It is free from acetic acid, inert matter and other impurities.

For Coast prices and supplies address the agents:

**KERR, GIFFORD & CO.**  
PORTLAND, OREGON



California Fruit Growers' Exchange. The whole industry has been standardized as to grade and pack. In all of these things we in the Northwest are, with certain exceptions, woefully lacking. There are a few well organized local associations, and these few have reaped in success the full measure of their careful labors, but to a great degree our industry is unorganized, and tremendous losses in values obtained for our products are the inevitable yearly harvest of our negligence. These losses are not altogether due to lack of marketing facilities either. They are frequently due to careless or ignorant grading and packing, and to the unfortunate lack of a uniform standard of grade under which the fruit could be accurately and intelligently described to the absent buyer.

There is, then, need of clear vision. Let us not become hysterical, our vision clouded and our mind obsessed with the idea that the marketing organization will become the panacea for all our ills. Let us look our weaknesses squarely in the face and build from the ground up. Let us organize every important local district thoroughly, standardize the grade and pack of the entire Northwest, maintain our grades as we maintain our religion, and provide the necessary facilities for placing ourselves in a position whereby we can control the markets, rather than have the markets control us. While it is true that values are based on the immutable law of supply and demand, it is also true that by regulation of the supply the demand can be stimulated and controlled, thereby avoiding wild fluctuations, and maintaining the market on an even keel which induces free consumption at the maximum consistent value.

The answer is found very largely in the provision of adequate cold storage facilities at all of the principal shipping points in the Northwest. The exchange cannot too strongly emphasize the value and immediate need of these facilities. Every year witnesses on an increasing scale the sorry spectacle of hundreds of cars of Northwestern fruits rushed into the Eastern markets at a time when the markets are glutted and sacrificed needlessly all because of lack of facilities for holding the fruit back at this end of the line, where it can be held at minimum expense, and feeding the markets as fast, and only as fast, as they can take it at correct values. All of these and many other provisions must be made before the issue rests wholly on the marketing organization.

This does not mean that great good cannot be accomplished even under present conditions by adequate marketing facilities. On the other hand, there is a regrettable lack of facilities in this

direction which the Northwestern Fruit Exchange seeks to correct. The exchange does not claim to have attained perfection. It does not claim to be able to accomplish the impossible, but it

feels necessarily encouraged at the result of this, its first season's operations.

From the very beginning it perceived the importance of avoiding the large Eastern centers in

## Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

## LUMBER

*Lath, Shingles, Wood, Etc.*

HOOD RIVER, OREGON

**FRUIT** Western  
Soft Pine.  
Light, strong  
and durable.

"Better Fruit"  
subscribers  
demand the  
"Better Box."

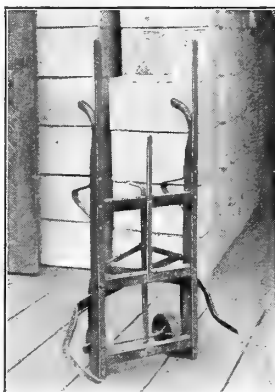
## BOXES

CAN MAKE TWO CARLOADS DAILY

## Washington Mill Co.

Wholesale Manufacturers

Spokane, Washington



## The PERFECTION CLAMP TRUCK

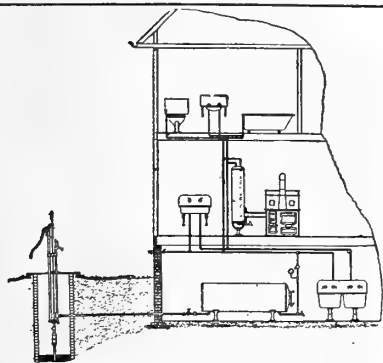
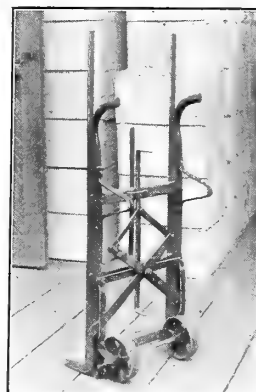
Patented 1910 in U. S. and Canada

Saves labor, jar and breakage. Indispensable to fruit dealers and growers. Write for circular giving descriptive details and prices f.o.b. Seattle, Portland and Vancouver, B. C.

Manufactured by

**SAMSON & ARCHIBALD**

Vernon, B. C., Canada



*Why not enjoy the most desirable of city conveniences?*

## Water Supply Under Pressure

YOU NEED A

## Leader Water System

IN YOUR HOME

No doubt you have often envied your city friends and wished for the conveniences afforded by modern water supply under pressure, in your home. The **Leader Water System** will enable you to enjoy these advantages more thoroughly than is possible with any other system. The **Leader** is not an ordinary farm water supply system, with its attending troubles and annoyances; it is far from ordinary. It will furnish a dependable supply of water wherever and whenever you desire it. You can enjoy modern home conveniences, such as the bath, toilet, etc. You will have plenty of water for all domestic purposes, the laundry, sprinkling and **PROTECTION AGAINST FIRE**, that danger which constantly menaces the rural home. Pressure up to 125 pounds may be maintained with **The Leader System**. As is shown in the illustration, the tank may be placed in the basement (more often it is placed underground), where it keeps the water cool and fresh in summer and prevents freezing in winter. The beauty of **The Leader System** is that it is practically troubleless. With the exception of a few moments when water or pressure become low, it needs no attention. **But for the fact that every time you have occasion to call on its services you are reminded of its efficiency, you would forget that you had such a thing as an independent water supply.** We will be glad to give you an estimate on a system that will meet your requirements. Use the coupon.

USE THE SLIP AND GET OUR FREE BOOK, "QUESTION OF WATER"

**Mitchell**  
LEWIS & STAYER CO.

*Vehicles and Implements*

**PORTLAND  
OREGON**

**Spokane, Washington**

**Boise, Idaho**

Mitchell, Lewis & Stayer Company,  
Portland, Oregon.

A-5

Send me your book, "Question of Water."

Name .....

Address .....

THE Famous **Rayo** Lamp



The Rayo Lamp is a high-grade lamp, sold at a low price.

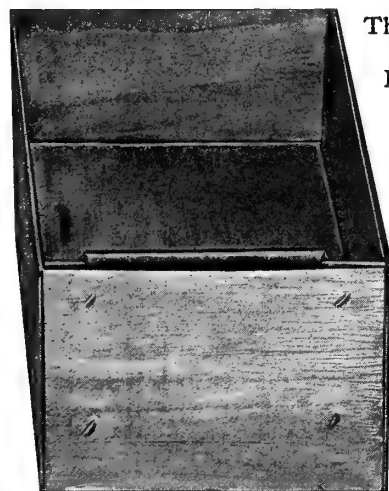
It gives the white, soft, mellow, diffused light, which is easiest on the eye; and you can use your eyes for hours under Rayo light without eye strain, because there is no flicker. The Rayo Lamp may be lighted without removing shade or chimney. You may pay \$5, \$10, or \$20 for lamps other than the Rayo and get more costly decorations, but you cannot get a better light than the low-priced Rayo gives.

Dealers Everywhere. If not at yours, write to the nearest agency of the

**Standard Oil Company**  
(Incorporated)

which hundreds of cars were being sacrificed at auction, and anticipated the results that would surely follow. By means of its sales forces it has reached out into the small markets and the remote districts, which have been comparatively free from demoralized competition, and has effected an extremely wide distribution, possibly the widest that Northwestern apples have ever undergone. The exchange has employed exactly *one hundred* different markets. It has handled over seven hundred carloads. It might have handled many more, but its policy has been "Quality of service first of all—the volume will take care of itself." Neither effort nor expense has been spared to obtain for the grower the utmost measure of money returns. The exchange will finish the year with a deficit, but with average net results which it honestly believes will *lead the entire Northwest*, taking into consideration variety for variety, grade for grade, and time of shipment. Its records are open to every fruit grower. It is operated by fruit growers under a wide-open policy. It stands ready to assist fruit growers to organize their districts where organization are now lacking, and to improve conditions all along the line. The exchange feels grateful to its members for the earnest support which has been accorded it, and especially for the warm words of praise which have come to it unsolicited from so many of its members. The exchange approaches the tremendous tasks ahead humbly and earnestly, determined to do its best, and bespeaks the sympathy and support of everyone who has the interests of this great industry at heart.

The exchange invites fruit growers from any district, whether affiliated with the exchange or not, to make its offices in Portland their headquarters while in the city, and its officials will



This Package  
is  
Perfection

## "SAVE-TIME" FOLDING BERRY BOX

USE BRAINS STOP STAPLING

LET OUR AUTOMATIC MACHINES DO THE WORK

Manufactured by

**Pacific Fruit Package Co.**

H. B. HEWITT, Pres. and Treas. J. H. HEWITT, Vice Pres. O. C. FENLASON, Sec. and Mgr.

Raymond, Washington

Agents Portland, Oregon, Territory:

**STANDARD BOX & LUMBER CO.**  
East Pine and Water Sts., Portland, Oregon

Agents Spokane Territory:

**WASHINGTON MILL COMPANY**  
Spokane, Washington

## Sell One Horse

And for the selling price buy a wagon that will pull one horse lighter. That is if you are now using three farm horses you can get along with two; if you are using four, three will do your work with a

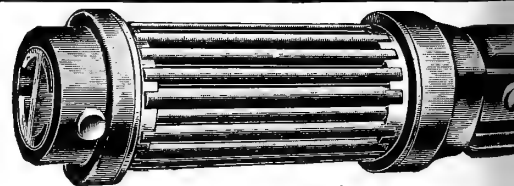
## Davenport Roller-Bearing Steel Wagon

5000 Pounds Capacity

Think of what that means to you. More trips, easier trips, fewer horses or larger loads, with the same horses and help. Anyway you figure it, it is a money-saving and a money-making proposition for you

In the **Davenport** you have a wagon guaranteed for 5000 pounds capacity, with gear of solid steel, rolled into the strongest forms known and trussed like the modern steel bridge. The wheels are steel with strong, round spokes forged solidly into the hubs and hot riveted into the tires. There is nothing to dry out, rot, shrink or work loose. No tire to reset, no breakdowns, no repairs. Oil without removing the wheels. Let us tell you all the facts. You should know what these advantages really mean to you. Then you won't be content till you own a **Davenport**. It will give you more than twice the service of the best wooden wagon made. And it costs about the same. Now write for Package No. 22.

**Davenport Wagon Company, Davenport, Iowa**



The Roller Bearing.

30% to 50%

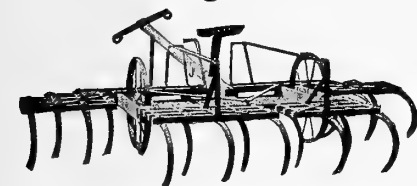
Lighter Draft

take pleasure in explaining in detail the workings of its system.

The records of every transaction made by the exchange are open at all times to the scrutiny of those shippers directly interested.—Contributed.

[Editorial Note.—The above article about the Northwestern Fruit Exchange, we feel, will be read with interest by all fruit growers of the Northwest. Mr. Gwin, their manager, in handling the business, has shown a familiarity with the markets and marketing conditions in the East that is indicative of good experience. The market reports furnished to the big dailies of the Northwest about marketing conditions in general prove very interesting and instructive to the growers, and it is evident to one familiar with the conditions this year, that Mr. Gwin has a pretty good understanding of the different markets and their respective conditions. The situation in general, judging from the articles published in the big dailies in reference to prices obtained, would, to one familiar with market prices this season, seem to show that good prices have generally been obtained for the apples sold by the exchange, where they have been up to grade, properly packed and of the standard varieties that are in demand.]

The Forkner Light Draft Harrow



Is the only perfect light running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3 1/2 feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expenses one-half even if you have but 5 or 10 acres of orchard. Full particulars upon request. Address LIGHT DRAFT HARROW COMPANY, Marshalltown, Iowa.

# PROFIT

by the experience of others, use

## Pittsburgh Perfect Welded Fence.

When you want a Wire Fence, remember this—you simply can't afford to get one until you have seen the strongest, simplest, most durable fence ever made, the

### Pittsburgh Perfect Welded Fence

One solid piece of steel throughout

Costs no more than others, yet it is the best fence. Best because it does away with all superfluous parts—best because it has no wraps, ties, twists or clamps—best because its wires are electrically welded at every contact point—best because the weld is stronger than the wire. When we cut out those superfluous parts we added strength and long life and reduced cost—that means double economy for you. The best because made of special steel, galvanized by the latest improved process, insuring the longest-lived fence on the market.

Made in 73 different styles for every fence purpose. Pig tight, bull strong. We guarantee "Pittsburgh Perfect" before you buy. You know what the R. M. Wade & Co.'s guarantee means. If there is no agency in your town write us.

## R.M.WADE&CO

Established IMPLEMENTS & VEHICLES Up to Date  
PORTLAND, OREGON

# OWN YOUR OWN IRRIGATION SYSTEM

CONVERT that creek, slough, pond, or other source of water supply that you think is worthless into a valuable asset—make it irrigate your entire farm.

You can have a dependable irrigation system of your own which will free you from the worries of uncertain rainfall and make you entirely independent of irrigating companies.

You know it is not so much the scarcity of water as the getting it from the place where it is not needed to the place where it is valuable.

An IHC gasoline engine will solve this problem for you by pumping the water economically and unfailingly. You can start the engine at any time and irrigate the crops whenever they need water—thus you are made master of the situation.

## IHC Gasoline Engines

require very little attention and will pump water in large quantities economically and unfailingly. An IHC gasoline engine will not only serve as the basis for your irrigating system but it will run your fanning mill, feed cutter, grindstone, bonecutter, churn, washing machine, and all similar machines.

IHC gasoline engines are made in the following styles and sizes:

- Vertical—2, 3, 25, and 35-horse power.
- Horizontal—(portable and stationary) 1, 2 1/2, 4, 6, 8, 10, 12, 15, 20, and 25-horse power.
- Tractors—12, 15, and 20-horse power.
- Air Cooled—1, 2, and 3-horse power.

Sawing and spraying outfits.

For detailed information concerning the one best suited for your individual use please call on the IHC local dealer or write to our nearest branch house.

**WESTERN BRANCH HOUSES:** Denver, Col.; Portland, Ore.; Salt Lake City, Utah; Helena, Mont.; Spokane, Wash.; San Francisco, Cal.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**  
(Incorporated)  
**CHICAGO U S A**

### IHC Service Bureau

**What is it?** A clearing house of agricultural data.

**What does it do?** Helps farmers to help themselves.

**How can it be used?** By sending your farm problems and puzzling questions to the Bureau.

We are co-operating with the highest agricultural authorities and every source of information will be made available to solve your difficulties. We shall be pleased to have an opportunity to assist you. Write the IHC Service Bureau.



THE horse does all the work, except holding the pole, with the H. P. SPRAMOTOR. It can be operated by either horse or hand. Has eight nozzles at 175 pounds pressure, which practically smoke the tree with spray. All automatic. The number of nozzles can be arranged to suit size of trees. The largest tree may be sprayed. Same price for one or two horses.

The H. P. SPRAMOTOR can be arranged for vineyards, row crops, strawberries or grain crops. The nozzles will not clog. Agents wanted.

Get our free Treatise on Crop Diseases.

R. H. HEARD

1333 ERIE STREET, BUFFALO, NEW YORK

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## Make Your Water-Power Work for You

It is a simple and easy matter to utilize the water-power that is going to waste in the flowing streams of water and springs. A two-foot fall is all that is necessary. You can make the falling water supply enough power to raise itself to a level where it will be useful to you. You can irrigate your land—you can supply water to your house and other buildings—you can store water for use when the stream or spring is low. No engine of any kind required. The power of the falling water does all the work with the aid of a

## Phillips Hydraulic Ram

**HOW IT WORKS**—To the right is illustrated a spring of water; on the lower left hand corner is pictured a cross section view of a PHILLIPS HYDRAULIC RAM. The little arrows in the spring indicate that the water is running into a pipe that is connected to the Ram. The water flows through the pipe downward to the entrance of the ram. Notice the numbers on the illustration and follow this description carefully. 1 is a ball that stops the water from going through until sufficient power is exerted. 2 is a sort of a valve that raises as the water gains in momentum. The water enters the ram and as it cannot go past 1 it pushes through valve 2. The little arrows illustrate the water pushing out. It comes faster and faster. When it reaches its top speed it carries the valve 2 up against a solid piece of metal 3. This shuts the water off at 2. The water having reached its maximum of speed and being suddenly shut off by valve 2, naturally tries to get out some other place, so it rushes up to ball 1 and pushes it out of its socket and flows past to 2. The instant the water enters chamber 3 valve 2 falls down again because the pressure is released. The instant valve 2 falls the water goes through passage 2 and ball 1 falls back into place. The water that went through has been captured and it can't get back. It has taken some little time for you to read this description of the operation. It takes but a very short time for it to happen. It happens some times 70

times in a minute. Now let us go a little farther. Every time valve 2 falls and lets the water through, the water falls down on ball 1. As it falls it causes some air to be sucked in from air faucet 3. Air can pass but one way through this faucet—that is in. When the water enters chamber 5, it carries the air with it. The air immediately goes up into chamber 6. Some air goes in with every action of the Ram. It compresses in chamber 6. When ball 1 falls into place, the compressed air forces the water from 5 out through 7 and up into the pipe at the left. The Phillips Hydraulic Ram has no springs—nothing to get out of order. It never has to be oiled. It works constantly day and night. The greater the fall of water the more power the Ram exerts—the more water it lifts. It pumps a large amount of water to a low height or a small amount to a greater height. Perfect in action, simple in construction, economical and efficient.

air suction

For information as to size of Ram you require, and price, write a letter explaining how much water fall you have, and other information, to

**Phillips Hydraulic Ram Co.**  
432 LUMBER EXCHANGE BLDG., PORTLAND, OREGON

## Buy Your Orchard Heaters Now

Everybody will want orchard heaters next spring; it has been demonstrated that orchard heating is profitable, and while heaters may not be needed next spring, it is well to be prepared for any emergency.

The National Orchard Heaters have been tested and have made good. Our sales are very great among those who have seen the heaters in operation. We know we will be swamped with orders in late winter and early spring, and therefore make special inducements for you to order now. Write us at once about your orchard, and we will tell you how many heaters you will need and the cost of same. Don't wait until you need the heaters—it will be too late then. Write now, and save money by ordering early.

**National Orchard Heater Co., Grand Junction, Colorado**



## Planet Jr.

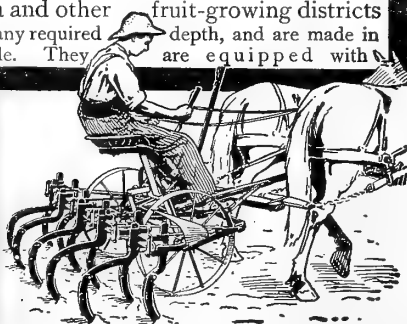
### No 41 Orchard and Universal Cultivator

Adapted especially for the work of orchardists and vineyardists. Does quicker and more thorough work than any other implement made for fruit-growers' use. Planet Jrs were invented by a practical farmer who felt the need of just such implements. They are backed by over 35 years' manufacturing experience, and are used by thousands of orchardists throughout California and other fruit-growing districts.

They furrow, hoe, and cultivate to any required depth, and are made in sizes which work up to 7 ft. 9 in. wide. They are equipped with side-hitch and fruit and tree shield. Can be changed to a disc-cultivator. High-carbon steel frame, steel tongue, low wheels enclosed by the frame. Strong, substantial, easily handled.

We carry stock in San Francisco. Agencies in all principal Pacific Coast cities. Write for name of nearest agent, also illustrated 56-page catalogue of all 1911 Planet Jr implements. Free and postpaid.

**S L Allen & Co Box 1106 U**  
**Philadelphia Pa**



## Johnson's Share Only 7%



I've got a most profitable chicken raising message for 1911 to send you—and my book, Johnson's own writings again. Hundreds of photographs—every page a poultry sermon on how simple and sure many thousands of satisfied customers of mine have proved Old

**M. M. Johnson** have proved Old Trusty. I'll write my price to you personally—less than \$10—freight prepaid (E. of Rockies) and show you how I'll make less than 7%—less than 70c on every Old Trusty on over 100,000 output this year.

## Old Trusty 1911 BOOK FREE—Send Name

I used to have to make as high as 16% when I sold one-half as many. But I'd rather put down the price and sell more than twice as many on 7% making profit. And Old Trustys are better than ever this year—over 80% hatches guaranteed and my guarantee to last you ten years. Handsome metal encased over asbestos covering. Beginners find them simple, easy to run and sure. Expert poultry raisers praise Old Trustys for highest standard success.

30  
60  
or  
90  
Days' Trial

10  
Year  
Guarantee



**JOHNSON**  
**Pays the Freight**  
**(East of the Rockies)**

Whatever else you do—don't miss this offer. Don't miss my 1911 Old Trusty Book with hundreds of photographs. Be sure to write me a postal before you buy anybody's machine this time. Address

**M. M. JOHNSON**  
**Clay Center Nebraska**



# Ogburn's Fruit Gathering Vessels

## THE LATEST INVENTION



EXHIBIT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON,  
- NOVEMBER 14 TO 19, 1910, WHERE IT TOOK  
FIRST PRIZE AND GOLD MEDAL

**Saves money** by preventing bruising fruit in handling from tree to box. **Saves time** by leaving both hands free to gather with, and being quick to operate. **Money saved is money made.**

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. **The canvas bottom slides from underneath the paper and delivers the fruit on your packing table without the slightest injury.**

This vessel is an oblong metal pail larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit at all.

The vessel holds one-half bushel or half box of apples, and in emptying the second time the canvas bottom eases the fruit in the vessel on that in the box without bruising or scratching, which is practically impossible with the wood or metal bottom pail.

## A Number of these Vessels Given Free

Every reader of "Better Fruit" should write at once and advise number of vessels he can use in 1911. This information is solicited to secure estimate of how many vessels to manufacture, so your orders can be filled promptly. All fruit-growers writing not later than April 1, 1911, will receive special order blank with terms upon which a number of these vessels will be given free. Don't fail to write now.

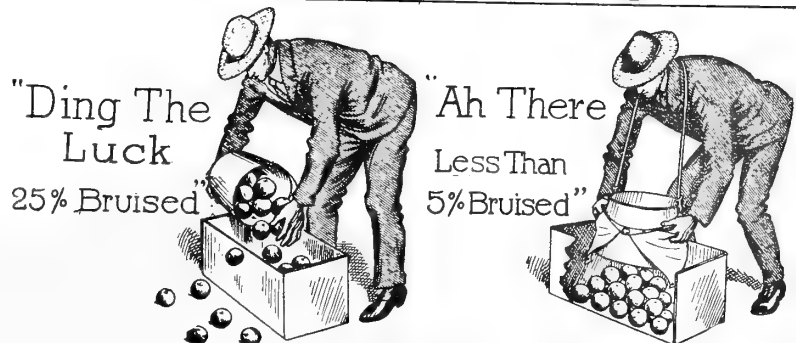
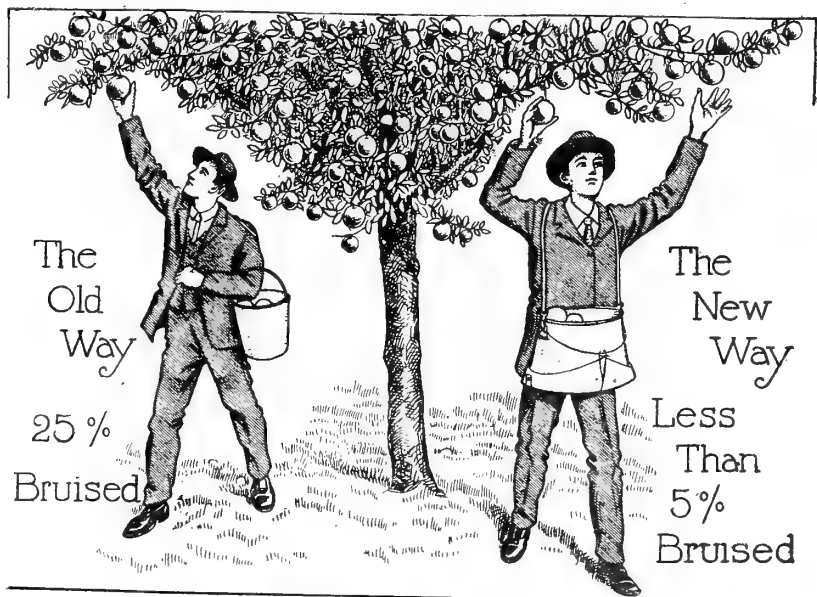
Special terms granted to dealers and agents in their respective trade districts. **Secure your territory for 1911 now.**

ALL GOODS SHIPPED DIRECT FROM FACTORY

Manufactured by  
WHEELING CORRUGATING CO.  
Wheeling, West Virginia  
For J. H. OGBURN, Patentee

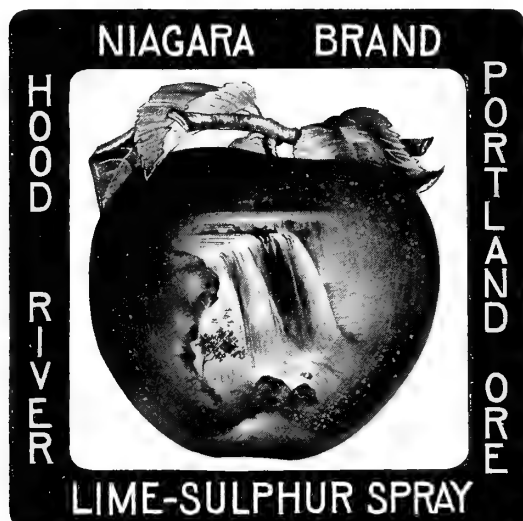
For territory and terms, address all applications to

**J. H. OGBURN**  
WENATCHEE, WASHINGTON



ILLUSTRATING OPERATION, OLD AND NEW WAY

## WHAT DOES THIS TRADE MARK MEAN TO YOU?



To the successful orchardist it means getting a standard lime-sulphur solution.

### ORDER NOW

It also reminds him that it is time to order his spray if he wants to get it on time.

By the time you have read this "ad" we will be shipping our early orders. If you haven't sent us or your nearest dealer your order better do it AT ONCE, else you may fail to get it when you want it

### AND GET RESULTS

Have you figured your returns on last season's crop? The culls represent the insects' share. Now is a good time to head them off on next season's crop. Think it's doubtful, do you?

### WHAT DADDY AND MAMMY BUG SAY

"We've had a very pleasant nap, thank you. Last fall when we were preparing to go into winter quarters under this piece of bark we weren't bothered in the least, for this tree wasn't sprayed. If only our orchardist will forget us another month, we'll get through the winter with our large family all right—these balmy days are just right for hatching all our young—by that time we can all be ready for a sudden departure to more neglected orchards if we see any lime-sulphur coming our way."

### SUCCESSFUL SPRAYING

If you were to read our booklet, you would change your mind. So would the bug family if you got busy and followed its directions. We are getting a lot of inquiries as to where reliable information can be gotten on WHY, HOW and WHEN to spray with lime-sulphur solution. We have written this book for these very inquiries.

### HOME-MADE SPRAY

If you were to read our booklet, you would change your mind. So send for our book. You'll cease to doubt or to make your own spray. Making your own spray is like trying to make your own machinery—expensive and of doubtful quality. It's too much like a guessing contest.

### CUSTOM SPRAYING

We are prepared to do your spraying for you at very reasonable rates and guarantee a thorough job. We have a thoroughly competent man, with years of experience behind him as a sprayer in one of the leading fruit districts of the Northwest, to run our outfit.

### CAUTION

Beware of any statements regarding the comparative analysis of NIAGARA and other lime-sulphur solutions, whether made by individuals or experiment station bulletins. Unless they specifically state, giving date, that the analysis was made of the NIAGARA brand manufactured at Hood River they are absolutely false, so far as our spray is concerned.

June, 1910, report on analysis at the Oregon Agricultural Experiment Station, Corvallis, Oregon:

No.	History of Sample	Grams per 100cc.—Original Solution		
		Total CaO	Sulfid sulfur	Polysulfid sulfur
1.	Commercial sample of "Rex" lime-sulfur spray	12.12	5.92	23.06
2.	Commercial sample manufactured by Oregon Spray & Gas Co., Portland, Oregon..	12.86	7.04	25.30
3.	Commercial sample manufactured by Niagara Spray Co., Hood River, Oregon.....	12.38	6.79	23.90

The above analysis proves conclusively that the statements of our competitors, quoted from a bulletin of the State College, Pennsylvania, are not warranted. The State College of Pennsylvania has never had a sample from our Hood River factory for analysis.

Very truly yours,

HOOD RIVER SPRAY MFG. CO.

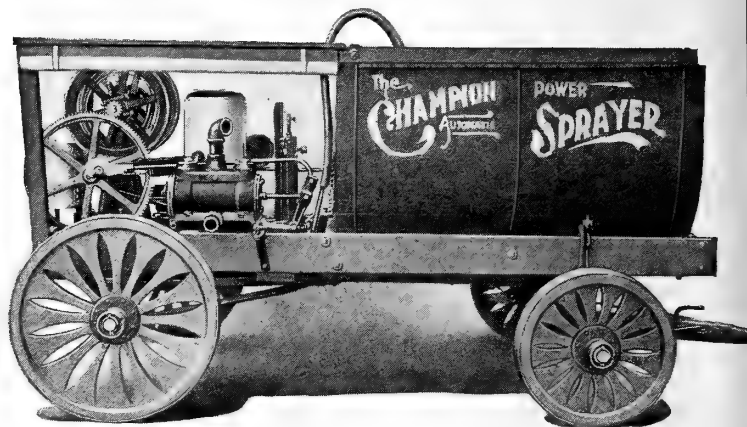
DON'T FORGET TO ORDER EARLY FROM THE

**HOOD RIVER SPRAY MFG. CO.**

309 FAILING BUILDING

PORTLAND, OREGON

## AS LONG AS YOU'RE GOING TO BUY A POWER SPRAYER, YOU'D BETTER GET THE BEST—A CHAMPION



**COSTS NO MORE TO BUY THAN ORDINARY OUTFITS AND COSTS A LOT LESS TO OPERATE**

**YOU COULDN'T DO WORSE** than to buy a poor sprayer—you'll pay for it twice over in time lost, solution wasted, and repair bills.

**OF COURSE IF YOU HAD TO PAY MORE** for the best sprayer—which is the Champion—then there might be some reason in saving money and taking a chance.

**BUT THAT ISN'T THE CASE**—the Champion costs actually less than inferior power sprayers of other makes. One reason is, the Champion is simpler, therefore costs less to build and so can be sold for less. Then, too, we make them in large quantities—being the largest exclusive manufacturers of power sprayers in the world, and we give you the benefit of the saving we effect in that way.

**THE SAME SIMPLICITY OF DESIGN** that enables us to make and sell the best sprayer for the price of an ordinary one also makes the Champion the easiest to operate and the most economical.

**SO THERE'S ONLY ONE REASON** why anyone would buy any other power sprayer—he hasn't seen a Champion in operation nor investigated its many superior features.

**YOU OWE IT TO YOURSELF** to get our catalog, study the technical description of this splendid outfit and let us send you the names of prominent orchardists everywhere who are using Champions. The rest will be easy.

**PLEASE REMEMBER THIS**—we are specialists. The Champion Manufacturing Company manufactures only power sprayers. We never have made water pumps nor farm machinery. Sprayers are not a side line with us.

**WE DEVOTE ALL OUR ENERGIES** to making the best power sprayer possible—one that solves all problems in the handling of all kinds of solutions, and does it more easily, quickly and economically.

**ORDERS ALWAYS AHEAD OF SUPPLY.** So send for catalog at once, then order quickly, so as not to suffer delay in delivery. Champion Automatic Power Sprayers are fully guaranteed.

**DO YOU KNOW** the Champion nozzle—the only variable one—does away with towers; sprays the highest branches, or lowest, from the ground; from any point regardless of direction of wind; does a perfect job—and saves half the solution. Look into it.

The  
**CHAMPION**  
AUTOMATIC

POWER  
**SPRAYER**

Department D

PONTIAC, MICHIGAN

**SPOKANE NATIONAL APPLE SHOWS.**—In acting as executive officer for the National Apple Show I am more deeply impressed with the spirit of the exhibitors than by anything else. As soon as the plans for the annual show are made known we begin to receive letters of encouragement from exhibitors of former years, and, as the campaign goes forward, we have continued support and co-operation. Many of these exhibitors have not won prizes, and to all of them the making of a display means a money outlay and the giving of time and labor. Yet they get behind the show in a spirit which makes the exhibition a guaranteed success from the start. When the decisions are announced the losers take their defeat with good grace, and the greatest satisfaction I have enjoyed as manager comes to me when these exhibitors, losers and winners alike, declare their intention of entering the race another year with a determination to do better.

Were it not for the financial support given the show by Spokane business men, the railway companies and a few other friends, the affair would be an impossibility, and our trustees fully realize the debt. At the same time we owe fully as much to the newspapers, trade journals and periodicals that give the affair such great publicity, and which encourage every move we make. Intelligent publicity is indispensable to an exhibition.

Plans for the Fourth National Apple Show are only being discussed in a tentative way as yet. The trustees wish to show the sentiment of the exhibitors before submitting any proposition to the Spokane Chamber of Commerce. We hope to

make each show an improvement over the last, and to this end we ask suggestions and criticisms while the tentative plans are the subject of discussion.

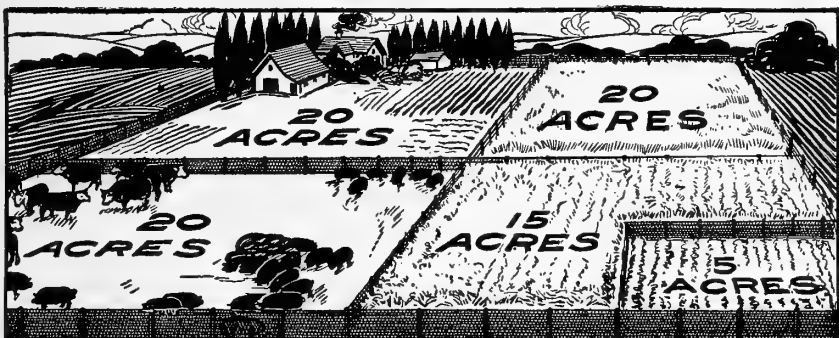
The taking of the exhibits to the East was such a great success this year from an advertising standpoint that it will probably be repeated. It is, however, a most difficult matter to decide what city will be best for the purpose. It should not only be a good "show" city, but so located that the exhibitors will attract the investing public and center interest in the resources of the Pacific Northwest.—Ren H. Rice, Manager of Spokane National Apple Show.



#### Editor Better Fruit:

The orchard heating number (October, 1910) of "Better Fruit" reached me today. I note with interest that you have honored me by making use of my article on "The Relation of the Weather Bureau to Horticulture," and also that the number contains many articles that will be of assistance to the growers in protecting their crops from frost. I shall have the pleasure of speaking to several gatherings of fruit men in the near future and I shall be glad to call their attention to this number of your magazine.

If consistent with your policy, I would very much appreciate half a dozen extra copies of this number. Thanking you for your kindness in the matter, I am, very respectfully, Edward L. Wells, Boise, Idaho.



## One Animal and Three Hogs to an Acre

**T**HIS is a fair estimate of the average feeding ability of the soil. On a farm of 80 acres the highest limit of efficiency is 20-acre fields. Large fields diminish the earning power because two small fields alternated will furnish much more support for stock than the same average in one big field. The fence is the important factor; and with the liberal use of gates, unlimited extension and alternation is simple.

The steel in Ellwood fence is specially made from carefully selected stock. It is hard, elastic, tough and springy. The line wires, composed of two or more wires twisted into cables, give each individual wire the shape of an elongated, coiled spring. The fence is therefore sufficiently elastic to take care of expansion and contraction, and yet so rigid when properly stretched

as to prevent sagging. The small and permanent mesh is made by weaving one continuous wire throughout the fabric. The mesh or stay wires are so interwoven that slipping is impossible. The triangular truss is the strongest form of construction known. For this reason, Ellwood fence will stand the hardest usage and still retain its shape

**Ellwood Fence is sold in your town.** Look for the er and let him show you his different styles of fence and quote you his low prices. Get his expert advice on your special needs. He is on the spot, buys in large quantities, gets the lowest carload freight rates, demonstrates quality before your eyes and is the man from whom you will get the most for your money.

**FRANK BAACKES, Vice President and General Sales Agent**

**American Steel & Wire Co.**

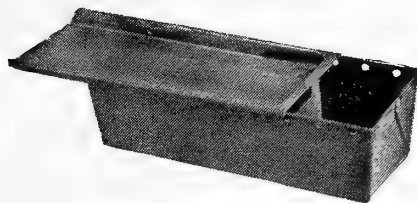
Chicago New York Denver San Francisco  
Send for copy of "Ellwood Fence News," profusely illustrated, showing to the interests of farmers and showing how fence may be employed to enhance the earning power of a farm. Furnished free upon application.

**ELLWOOD FENCE**  
MADE OF TOUGH SPRINGY STEEL

#### Editor Better Fruit:

Your October number of "Better Fruit" treating on orchard heating is certainly a most excellent one. In fact, it is so good that I should like very much to get ten, or possibly twenty-five, extra copies of this number to be used in some class work here at this college. I shall be pleased to pay you for these. Kindly let me know if you can supply them.—Yours very truly, F. C. Reimer, West Raleigh, North Carolina.

## The Hamilton Reservoir Orchard Heater



Acknowledged and proven, after three years' most successful use, the standard of efficiency and the KING of all heaters.

Millions of dollars' worth of fruit saved from spring frosts by its use.

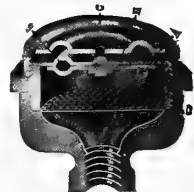
Most wonderful invention of the age, and the fruit grower and vegetable producer reap the benefits.

The "Draw the cover and regulate the fire" principle has won, and we offer you the very best your money can buy, with absolute protection to your crops. A quarter of a million heaters in the hands of inexperienced growers last spring has proven every claim we have made. Get in line with other progressive growers and protect your crops from frost. Write us today for full information and for the story of "Frost Fighting," which will interest you.

## The Hamilton Reservoir Orchard Heater Co.

Grand Junction, Colorado

Get to the  
Very Center  
of the  
Blossom with  
the great



## Non-Clog Atomic Nozzle

The great Non-Clog Atomic Nozzle is a perfectly simple, simply perfect nozzle which will not—cannot clog. A test was made by spraying a solution of sawdust.

It is instantly adjustable, even when working, from a mistlike, narrow or wide angle spray to a concentrated stream. This feature makes it the ideal nozzle for orchard or field work. It will throw the solution to the top-most branches of the tree or gently sprays it over the most tender vine.

When used in connection with a 45 degree elbow, the Non-Clog Atomic throws the solution squarely into the center of every blossom—applying it into the calyx—the only successful way to combat the codling moth. It is fitted with four removable discs which give a capacity of 1—2—3 or 4 point Vermorels. It is cast bronze. The discs are galvanized steel or brass as preferred. It has no projections to catch on limbs. We are the largest

## Hand and Power Spraying Machine

manufacturers in the world. Practically all Government and State Experiment Stations endorse Brown's Auto-Sprays. More than 300,000 in use.

Send for book of 40 styles and sizes of Hand and Traction Power Auto-Sprays. This book contains an article on spraying by Prof. M.V. Slingerland of Cornell University of Agriculture and shows you the right machine for your purpose at the right price.

**The E. C. Brown Co., Rochester, N.Y.**

Pacific Coast Trade Supplied by  
Chas. H. Lilly Company, Seattle, Wash.

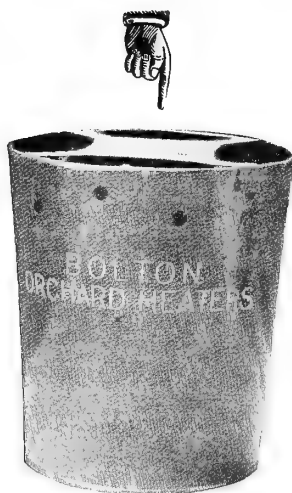
# CROP INSURANCE

## Frost Prevention—The Only Safe Insurance

When the saving of fruit crops by means of smudge fires was first undertaken it was known as "frost-fighting." This led to the development of a number of devices for burning the various fuels, and the operation then became known as "orchard heating."

The first successful heater on the market was the California or Fresno oil pot, afterwards known as the Bolton Orchard Heater. It was invented by a

### THE SOOT GATHERER



THE HEATER

man with twenty years' experience in the government weather service, and has been in use by the University of California for many years.

It was the first heater used in Colorado, and revolutionized fruit growing there.

Its success has brought forth a cloud of imitators, who are endeavoring to introduce many expensive and ineffectual devices among the growers.

Under the ownership of THE FROST PREVENTION COMPANY of San Francisco many improvements have been made. The heater, with a reliable electric frost announcing thermometer and a simple lighting torch, is known as

#### Bolton System of Frost Prevention

Today this is the only scientific, economical and reliable means of preventing damage by frost. Its successful operation is based on the scientific fact that a warm, even blanket of fog over the entire orchard, maintained while the temperature is in the danger zone, will prevent frost formation. Large fires

cause drafts and cold rushes of air, allowing the frost to settle in spots. Also trees near the fires are scorched.

The experts of THE FROST PREVENTION COMPANY, after many experiments, decided on the shape and two sizes of heaters offered, as giving the best results. A perfect heat blanket will be formed with one fire at each intersection and a double row around the outside. Large pieces of soot and unburned carbon were thrown off by the open burning fires. This caused damage to fruit and blossoms. To prevent this damage a soot gatherer was invented.

#### The Introduction of the Soot Gatherer Marks an Epoch in Horticulture

The soot is all collected and thrown back into the flame to be burned. With the soot gatherer in use the same amount of fuel burns almost twice as long and gives off double the heat. Dense clouds of pearl gray fog pour from the pots and settle evenly over the orchard, making a warm, impenetrable blanket, and absolutely preventing frost. All cold rushes of air are eliminated. The ideal, even blanket that affords complete protection is spread over the crop.

With these heaters installed and operated as directed, and the frost announcing thermometer working, the grower has absolute protection from frost.

**The Bolton System of Frost Prevention** Offers the grower the only complete chain of protection on the market.

Many California or Fresno oil pots were sold before the invention of the soot gatherer. Any grower who has these heaters can buy the soot gatherer for 2½ cents each f. o. b. his freight station.

The heaters used in

**The Bolton System of Frost Prevention** Hold four quarts of oil, burn eight hours and cost 20 cents each f. o. b. the grower's freight station.

A larger size, holding seven quarts of oil and burning twelve to fifteen hours, can be had for 26 cents f. o. b. the grower's freight station.

The thermometer costs \$22.50 f. o. b. the grower's station.

**THIS MEANS \$20 PER ACRE FOR COST OF EQUIPMENT.**

**THIS MEANS ONE HUNDRED GALLONS OF OIL PER ACRE FOR EIGHT HOURS' PROTECTION.**

**THIS MEANS ABSOLUTE PROTECTION FROM FROST FOR LESS THAN HALF OF THE EXPENSE WHEN USING OTHER HEATERS.**

The California Fruit Growers' Exchange, after a careful investigation, adopted

**The Bolton System of Frost Prevention** And placed an order for one million heaters.



THE THERMOMETER

The fruit growers of Florida have bought over two carloads of these heaters since December 1st.

Growers throughout the country are discarding other heaters and installing

**The Bolton System of Frost Prevention**

**THE FROST PREVENTION COMPANY** is willing to enter a field competition with any orchard heating company and absolutely demonstrate the merits of this system to the growers.

The most complete protection.

The lowest cost per acre to install.

The smallest fuel consumption per acre.

These are the points that interest you, the grower.

These are the reasons

**The Bolton System of Frost Prevention** Has a larger sale than all other frost-fighting devices put together.

These are the reasons why you should buy **THE BOLTON SYSTEM OF FROST PREVENTION.**

Place your order today. Any defective heater or thermometer will be replaced free of charge. Deliveries will be made promptly.

## The Frost Prevention Company

Balboa Building

San Francisco, California

**GROWERS DESIRING THE SOOT GATHERER WILL BE GLADLY SUPPLIED AT 2½c PER GATHER**

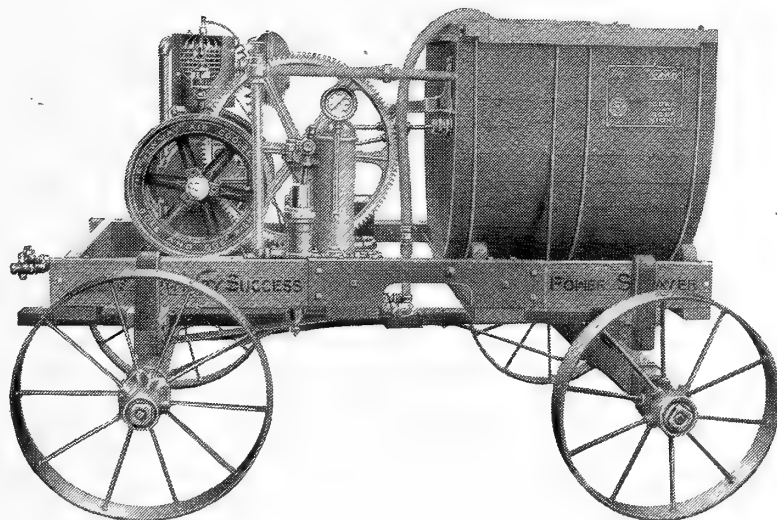
WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



# *THE "New-Way" "SUCCESS"*

Twin Cylinder, High Pressure Power Sprayer

*The  
Right  
Size*



*For the  
Average  
Orchard*

## **The "New-Way" "Success"**

is the first, light weight, high pressure power sprayer that *exactly fills the bill* for the ordinary sized farm orchards

### **SOME REASONS WHY**

1. The "New-Way" Air Cooled Engine gives the power, lots of it, and some in reserve. No water tank, no gasoline pump, no needle valve to give trouble. A farm engine for every day in the year.
2. Twin cylinder "Success" Pressure Pump, outside packed—don't forget this. Packed in five minutes without tearing pump down at all.
3. 200 pounds pressure kept up continuously. Doesn't injure the outfit either. The "Success" lasts indefinitely—is not a one-season machine only.
4. Light weight. Goes anywhere over hard, soft or hilly ground. Short turn. We'll tell you the rest when you send for "Success" catalog.

## *THE "New-Way" "SPECIAL" Sprayer*

Has larger capacity for the largest fruit orchards. Ask for "SPECIAL" sprayer catalog

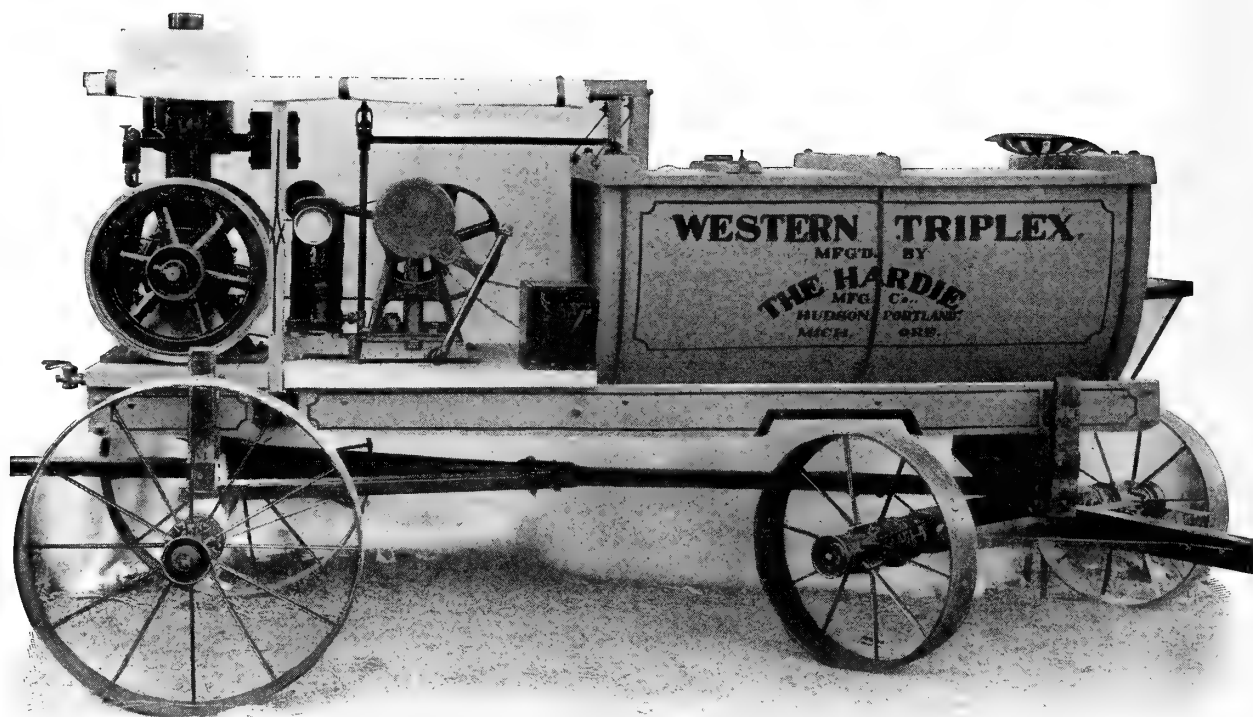
Mention "Better Fruit" and write for catalog to

***THE "New-Way" MOTOR COMPANY***  
**LANSING, MICHIGAN, U.S.A.**

OR

**John Deere Plow Co.**  
Portland                      Spokane

# The HARDIE TRIPLEX



From Maine to Washington, the Hardie Triplex Sprayer is working successfully. Our model for 1911, shown in the cut above, gives you an idea of the completeness of this machine.

Small details, which tend to perfect it in usefulness and completeness, are carefully looked after.

We give you a machine ready to run every minute you need it, doing efficient work for you all the time, and with

## *Nothing to Watch but the Spray*

Light in weight, compactly built, efficient in every way, don't buy till you see the HARDIE TRIPLEX.

Our new catalog is now ready, showing over twenty different styles of hand and power spraying machines, nozzles, hose, etc.

Last spring when looking for a sprayer we looked at all the sprayers on the market and decided on the Hardie as being the machine suitable for our work. Before buying we were told by some that the brass cylinders on the Hardie pump would not last and would be soon eaten up by the action of the spray material. After a season's use we can say that the cylinders are as good as when the machine was taken out. The machine has been exceedingly satisfactory in every respect and has done all you claimed for it. You may use our names as reference at any time.

Wenatchee, Washington.

P. J. Morris.  
J. R. Phipps.

The Hardie Triplex Sprayer I purchased this spring has given the best of satisfaction and I do not hesitate in recommending it to every one as the best power sprayer on the market. On account of its low build and light weight it can be taken into orchards where no other power sprayer would go without tearing the trees and knocking off the fruit. I have not paid out one cent for repairs this year.

Dr. H. J. Whitney.

Cashmere, Washington.

*Send for Our Catalog Today*

## The Hardie Manufacturing Company

Hudson, Michigan

49 Front Street, Portland, Oregon

**A LARGE WALNUT PLANTING IN THE VALLEY.**—The Oregon Nursery Co., of Orenco, Oregon, report the sale of sufficient walnut trees of the Vrooman Franquette Strain to James Bros., of Falls City, Oregon, to plant 200 acres, through their representative, J. D. Waring, of the firm of Stubbs & Waring of Salem, Oregon. This will probably be the largest single walnut planting in the Willamette Valley thus far, but it indicates the trend of people's attention toward walnut planting. There has been so little attention paid to the selection of varieties until the past few years that many people are skeptical concerning the advisability of planting walnut trees, but with the intelligent selection of a variety suitable for this district there is no doubt that such an undertaking will bring big returns. The Vrooman Franquette is the one variety that seems to fill all the requirements—being a late bloomer, hardy and prolific producer of large, well filled, highly flavored nuts. This variety is being planted very extensively in California on account of the splendid record made by the large grove owned by the late Mrs. Emily Vrooman.—Contributed.

◆ ◆ ◆  
**Editor Better Fruit:**

At our annual meeting the president was directed to call a convention of fruit growers and fruit shipping associations to meet in Portland early this winter to "consider organization of a fruit growers' central agency for the entire Pacific Northwest, and to consider the attitude which should be taken toward national apple box legislation."

Pursuant to that authority, I hereby call said convention to meet at ten a. m. January 24, 1911, in the auditorium of the Y. M. C. A. Building, Portland, Oregon. You are cordially and urgently invited to attend or to send a representative. I am writing every apple shipping association of the Pacific Northwest to send a delegate.

Having learned, since our meeting, that the State Horticultural Association of Washington is to meet at Prosser, January 17th, I have set date of the Portland convention a week later, so that some of us may attend the Prosser meeting and hear these questions discussed by Washington growers, before the convention here.

I hope to see you at the Prosser meeting, and trust, after discussion there, these questions may be referred to the Portland convention, and that you will attend the latter.

I take the liberty of enclosing copy of press clipping touching these questions. Yours very truly, H. C. Atwell, President Oregon State Horticultural Society, Forest Grove.

# Wallace Peerless Power Sprayer



## PROVEN BEST BY EXPERT TEST

In design, construction, and economy of operation, the PEERLESS spraying outfit is without a peer among power sprayers.

Equipped with our patent pressure regulator, insuring steadiness of pressure, and our new design rotary agitator insuring adequate agitation of spraying mixtures.

Write for Descriptive Catalogue

**AMERICAN SPRAYER COMPANY**

Minneapolis, Minnesota

# A Happy Thought—

## THAT SURELY IS WHAT IT IS—

The "Kansas Pruning Knife" and the smaller "Happy Thought" make the best combination of two tools that was ever put on the market for your orchard work.

A demonstration is all you need to see to prove the above statement.

# GILBERT-VAUGHAN IMPLEMENT CO.

HOOD RIVER, OREGON

Agents for Hood River, Oregon, for the International Tool Co., 49-51 Porter Street, Detroit, Michigan

# The FAMOUS REX SPRAYS

REX LIME AND SULPHUR SOLUTION, the original concentrated preparation for spraying fruit trees and for animal dip.

This article has been on the market for some eight years and wherever used throughout the United States has given universal satisfaction. It has always been recognized as the highest standard of commercial solution. Because some of our imitators have succeeded in making a concoction that gives a fair Beaume test is by no means a sign that they have the merit that Rex has. We quote the following from the Michigan Experiment Station, Chemical Division:

East Lansing, Michigan, June 8, 1910.

Mr. W. S. Pullen, Hillsdale, Michigan.

Dear Sir: I send you herewith the results of our analyses of the three samples of spray mixture which were brought to this laboratory by Professor Eustace of the horticultural department:

	No. 1 Lab. No. 2488 Per cent	No. 2 Lab. No. 2489 Per cent	No. 3 Rex Lab. No. 2490 Per cent
Total sulphur .....	14.61	17.40	26.23
Total lime (CaO) .....	6.32	7.93	10.38
Sediment .....	16.59	12.90	.....
Beaume .....	34.4	34.2	33.

As the insecticidal value of the lime and sulphur solution is without question due to the amount of sulphur combined which goes into solution, you will readily see that the REX solution is equal in value to one and one-half times as much as Solution No. 2, and one and eight-tenths more than Solution No. 1. The large amount of sediment in Solutions 1 and 2 would of course lower their efficiency.

I will send you a report of the arsenate of lead in a few days.

Yours very truly,

A. J. PATTEN, Chemist.

P. S. (By W. S. Pullen): Samples 1 and 2 were home-made, and we had a good plant.

Yours very truly,

W. S. PULLEN.

This proves that the analyses of this state official bulletin shows that Rex will stand from 10 to 60 per cent greater dilution than any of these brands, and shows that the directions for Rex are right and that every one of the others is wrong. This also shows that Rex at the same price per barrel is from 10 to 60 per cent cheaper than the others.

## REX ARSENATE OF LEAD

We are also prepared to furnish our customers with the highest grade of Pyro and Ortho Arsenate of Lead, having the following guaranteed analysis:

Over 15 per cent arsenic oxide; not more than 50 per cent moisture, and less than one-half of 1 per cent soluble arsenic. The facts are, that Rex Arsenate of Lead averages over 16½ per cent arsenic oxide and less than one-quarter of 1 per cent soluble arsenic. So you see that this is far better than what is required in the federal insecticide law.

FOR INFORMATION AND PARTICULARS ADDRESS:

California Rex Spray Company  
Benicia, California

Yakima Rex Spray Company  
North Yakima, Washington

Wenatchee Rex Spray Company  
Wenatchee, Washington

Editor Better Fruit:

There has been sent you, under separate cover, a copy of booklet on Oregon gotten out by the Great Northern Railway treating of the opportunities now open in your state, as well as those which are to be facilitated through the railroad, by opening up of Central Oregon. While this bulletin treats more largely of that portion of Central Oregon tributary to the Oregon Trunk

Railway, mention has been made of nearly all localities in your state in general.

You may be interested in knowing that 20,000 copies of this booklet were distributed by the Great Northern Railway at the United States Land and Irrigation Congress at Chicago, which closed on December 4th. The Oregon portion of the Great Northern booth attracted a great deal of attention among the many thousands of spectators who visited the congress daily. Our exhibition car, which you are no doubt aware is now traveling through the Eastern States, has already drawn upon our supply for another 20,000 copies of this bulletin, which will indicate in a small measure the great interest the people of the Eastern and Central States are taking in the future possibilities of Oregon. These 40,000 copies are in addition to those put out through our various exhibition rooms and general agencies.

A copy of this bulletin is sent to you as we believe you are interested in any proposition that may tend towards bringing your wonderful state before the people who have the intention of taking up homes in a new country. Yours very truly,  
S. J. Ellison, General Passenger Agent, Great Northern Railway, St. Paul.

Editor Better Fruit:

Please find enclosed \$1.00 to renew my subscription to "Better Fruit" for one year. Allow me to compliment you on the style and make-up of your magazine; you are doing good work, and I wish you every success.—Very truly yours, J. E. DuBois, New York.

### IF YOU WANT TO KNOW MORE ABOUT THE WEST,

Resources, opportunities, life, literature, etc., don't delay, but send the coupon at once. The West of today will astonish you. There is something doing in the empire beyond the Rocky Mountains that will interest you. Get in touch with a live land, where fortunes await the willing.

The Pacific Monthly Company,

Portland, Oregon.

Enclosed find 25 cents. Please send three recent numbers containing information about the West.

Name.....

BF Address.....

## LILLY'S BEST SPRAY BOOK

This is the book every fruit grower and farmer needs. It is complete in every detail including an absolutely scientific Spray Calendar with diseases and insects illustrated and described.

### HAND AND POWER Spray Machinery

Tested sprays and insecticides are all included together with prices, illustrations and full descriptions. Lilly's Spray Book is a practical guide. Send for it—free to those asking. Chas. H. Lilly Co., Seattle.



### Read what Hood River says

Hood River, Oregon, November 27, 1909. This is to certify that I have used Cooper's Tree Spray Fluids, V1, for killing San Jose scale and found it very effectual.

G. R. Castner, County Fruit Inspector.

### APTERITE

THE SOIL FUMIGANT DESTROYS INSECTS IN THE GROUND

REDUCES LOSSES SAVES PROFITS IT WILL PAY YOU TO INVESTIGATE

Write for 1910 booklet (32 pages)

Testimony from fruit growers everywhere

Agent:

C. G. ROBERTS

247 Ash Street Portland, Oregon

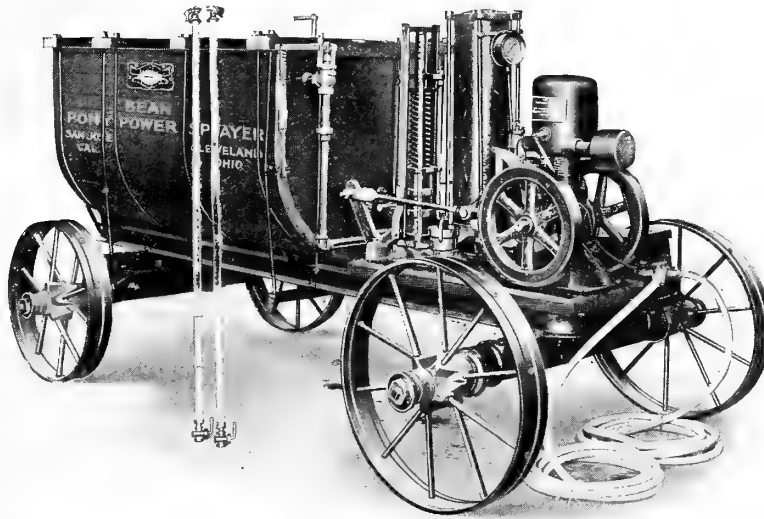
Sole Manufacturers:

William Cooper & Nephews  
CHICAGO, ILLINOIS



# BEAN POWER SPRAYERS

Simple to Operate! Easy to Haul!



BEAN PONY OUTFIT No. 140—A REMARKABLE SPRAYER FOR SMALL ORCHARDS

You want a sprayer that will run week in and week out without the need of constant repairing, adjusting and "tinkering". You want a sprayer that you can operate yourself, without the help of a trained mechanic. You want a sprayer that can be hauled anywhere in your orchard, on the level or over hills, on hard ground or soft, on dry ground or wet.

Then get a Bean. It doesn't matter what size you get, so far as quality goes, all Bean outfits are built equally well—they all have the unique patented Bean features. The chief difference is in capacity.

Bean Power Sprayers are furnished with our Sprayer engine or the Fairbanks Morse Jack-of-all-trades. All have our indestructible porcelain-lined upright cylinders.

All have Bean bell metal ball valves, which seldom ever clog and cannot possibly corrode. The wear comes on the seat which is inexpensive, is machined on both sides so that it can be turned over when worn, and can be reached in one minute when you have to get at it. No threads of any kind.

There's a Bean Outfit for every size orchard, Giant, Challenge and Pony. Write for quotations and the name of your nearest Bean agent.

## Bean Spray Pump Co.

"Everything for Spraying"

Cleveland, Ohio

SAN JOSE, CALIFORNIA

SEND FOR OUR NEW  
1911 CATALOGUE

It illustrates and describes all Bean Power Outfits, Hand Sprayers, Spraying Materials and Pump Accessories. A handy book for every orchardist. Sent free for your name and address.

# THE BECK POWER SPRAYER

Some reasons why you should use a **BECK POWER SPRAYER**

**First**—The wide range of capacity possible to secure from the "BECK" line. Our smallest outfit, No. 200, is our Duplex pump and 2-h.p. engine, and has a capacity of 7 gallons of solution per minute. Our Duplex outfit No. 203 has a capacity of 9 gallons per minute and will supply six large round angle nozzles. No. 300, our Triplex outfit, will supply eight angle nozzles with a capacity of 12 gallons per minute. The largest power outfit manufactured is our Triplex No. 304, with a capacity of 15 gallons per minute.

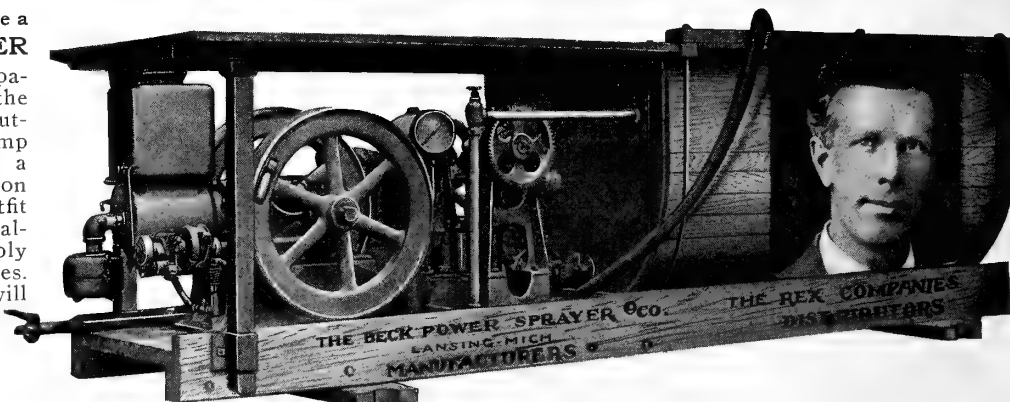
This machine will supply four open bordeaux nozzles at 300 pounds pressure. **Second**—We are the first firm to manufacture a line of pumps that will maintain an actual working pressure of 300 pounds. You know that this means more rapid work, and an economy of spray solution that can be obtained in no other way. No danger of breaking the pump, for it is tested to withstand a pressure of 500 pounds before it leaves the factory. The balance of the waterways with the displacement of the plungers and the passage capacity of the valves makes the pumps absolutely free from air cushions, and means that a rapid development of a steady high pressure is always possible.

**Third**—We had the only outfit at the National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910, that could and did take the 30-minute test at a pressure of 300 pounds. In this test the "BECK" was the only machine that ran the full time of the trial without a stop or engine trouble, and it led its class by a score of 15 points over its nearest competitor, in capacity and general operation—the important features of a power outfit.

Mr. Grower, we know that you will want real reliability in your outfit, and we ask for a careful investigation of our machines.

WRITE FOR CATALOG AND PRICE LIST, MENTIONING "BETTER FRUIT"

**THE BECK POWER SPRAYER COMPANY, Lansing, Michigan**



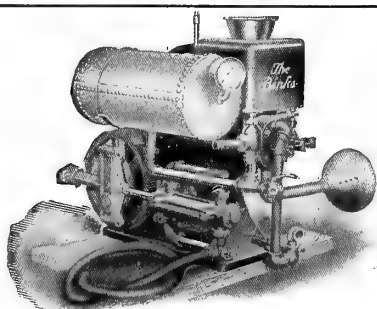
## HEADQUARTERS FOR CENTURY SPRAY PUMPS

Hose, Nozzles, First-  
class Plumbing Supplies

**C. F. SUMNER**

Successor to Norton & Smith

**HOOD RIVER, OREGON**



Binks Sprayers are Good  
Sprayers  
**THE BINKS SPRAYING MACHINE CO.**  
Chicago

### Editor Better Fruit:

After looking over the fruit situation of Southern Idaho the past few days I find the conditions run about as follows:

Early in the year our growers conceived the idea of using modern appliances for the purpose of battling with the elements. They therefore invested in smudge pots of various kinds and sizes and qualifications. The Oregon Short Line people were very kind to our growers and made them a special rate on crude oil, making it possible for each grower to supply himself with the necessary fuel for saving his crop if he so wished.

The live numbers took advantage of this opportunity and laid in a supply, also arranged with his friends and neighbors to assist him in the event of a killing frost. The local director of the Government Weather Bureau gave out the weather forecasts to the telephone companies, and they in turn reported the weather conditions on all rural lines at 12 o'clock, thus giving the farmers an opportunity to get ready for severe weather.

In addition to this feature the Independent Long Distance Telephone Company, with whom most of the farmers have connection, kept a special man at the desk during the frost season to receive reports during the night from the weather bureau, and in case of threatened danger call the parties throughout Southwestern Idaho, at all hours of the night, and inform them of conditions, so that by so doing our people saved their crop of apples, prunes, pears, peaches and berries.

We experienced a great deal of difficulty in securing box material, as well as crates and baskets in which to pack our fruit after having grown the same. This unfortunate condition was general throughout Southwestern Idaho. It seems that many of our box manufacturers sold more material than they were able to deliver, and since the average grower under-buys and the millmen over-sold, the outcome was disastrous.

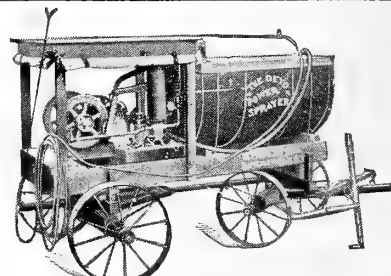
The fruits from this district found a ready market to the various parts of the world. Prunes going to all of the leading markets of the United States, as well as Glasgow, Liverpool and London, and in every instance commanded good prices, netting the grower from \$18 to \$25 per ton on the tree. Our apples were favored by finding a good market for the better varieties; such as Jonathans, Winesaps, Grimes Golden, Spitzenbergs and Newtowns returning a net price of from \$1.35 to \$1.65 to the grower, while other varieties ranged in price from 90 cents to \$1.40. It was my good fortune to attend the Third National Apple Show at Spokane, and was given the opportunity to look into the good as

well as the inferior qualities of the apples from the entire Northwest, and I feel that I make no mistake when I say that I consider the leading varieties of apples grown in Southern Idaho to equal those grown in any other section of this great coming fruit world.

Our growers are fast learning that it is the duty of one man to grow his fruit and see that same is grown to perfection, and that it is the duty of the second party to see that the said fruit is properly packed and marketed.

I am a great admirer of fruit growers' organizations, providing said organizations are conducted along business lines. That the growers bind themselves together in such a way as to protect their interests as well as the interests of the man who bids on their crop. I should, indeed, like to hear of the reorganization of what was once known as the Northwest Fruit Growers' Association, as I think that organization, when properly conducted, would lead to either another organization or cause, through the proper committees, a plan to be outlined for the purpose of handling the apples of the Northwest. At the present time this is a small problem, but with the wonderfully increased acreage and the natural inclination of one grower to undersell his neighbor, I think something of the marketing character will be an essential feature to be considered.

With wishes that 1911 be a most prosperous year for "Better Fruit," I remain, yours respectfully, C. J. Sinsel, Boise, Idaho.



### DEYO POWER SPRAYERS

The first successful power spray outfit. Operated by either our 2 or 3-h. p. air-cooled engine. Nine years of success. If you do not know us, we refer you to thousands of the largest fruit growers. Satisfied customers are our reference. Outfit fully guaranteed. Write for Catalog No. 20. Deyo-Macey Engine Company, Binghamton, N. Y.

# Something you should know about Arsenate of Lead

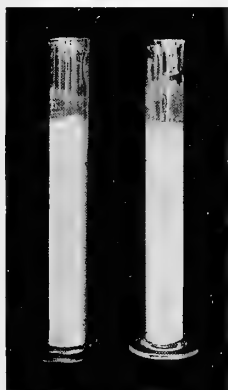


Fig. 1

ALL Arsenate of Lead which meets with the various Government requirements is not of the same kind. There are two distinct forms of Arsenate of Lead, and the object of this advertisement is to show to the grower the difference between these two and enable him to make an intelligent selection of the kind best suited to his needs.

Neutral Arsenate of Lead is composed of arsenic and lead and prepared in such a manner that all the arsenic is thoroughly combined with lead. This material is very light in gravity, settles very slowly in water, is fluffy and holds a large amount of water and when sprayed on foliage clings very tightly to it. On account of its fluffiness it has great covering power, and because the arsenic is thoroughly combined with lead it does not change its composition on exposure to the weather and so will not burn the most delicate foliage.

The second material is the acid Arsenate of Lead, in which only two-thirds of the arsenic is combined with lead, the other third being very loosely combined so as to form a precipitate which is insoluble in water at first, but which on exposure to the weather begins to disintegrate and give free arsenic, which will severely burn tender foliage. This material is much heavier in gravity, not so fluffy, will not hold as much water, settles much more rapidly in a spray mixture, and does not cover the area of foliage so thoroughly on account of its greater density. Such a material is suitable for

spraying forest or shade trees where foliage injury is not quite so important, but it is not adapted for spraying delicate fruit trees.

The photographs in this article illustrate the difference in the two forms of Arsenate of Lead: one is Sherwin-Williams New Process Arsenate of Lead, which is the highest type of an absolutely neutral, thoroughly combined lead arsenate, and the other is one of the typical brands of acid Arsenate of Lead offered in competition at a much lower price, which shows very clearly the defects common to this form of Arsenate of Lead.

In the illustration shown by Fig. 1 we have a picture of these two forms of Arsenate of Lead stirred up in water and allowed to settle for fifteen minutes. The same quantity of paste is used in each case and diluted to the same total volume with water. Fig. 2 shows them after they had stood over night and settled all they could.

After thoroughly settling, the bulk occupied by a given quantity of S-W New Process Arsenate of Lead is approximately 45 cubic centimeters, whereas the competitive material, in the acid form, is 20 cubic centimeters, showing two and one-quarter times the bulk for New Process Arsenate of Lead.

The facts given above plainly show the inadvisability of the orchardist using the cheaper grades on the delicate foliage of his fruit trees. There's no need to take chances. Use the best.



Fig. 2

## A TEST OF TWO DROPS

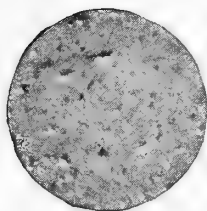


Fig. 3

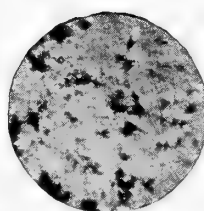


Fig. 4

Figs. 3 and 4 are micro-photographs magnified 30 times of a drop from each of these solutions stirred up and placed on glass. Fig. 3 shows that New Process Arsenate of Lead covers a given surface more thoroughly than the acid material, leaving no spaces between the particles. We also found that when dry the acid solution rubbed off the glass much easier, showing its adhesive qualities were not so good.

For the Horticulturist and the Fruit Grower there isn't a better spray than Sherwin-Williams New Process Arsenate of Lead. Send for prices on your Spring requirements.



## THE SHERWIN-WILLIAMS Co.

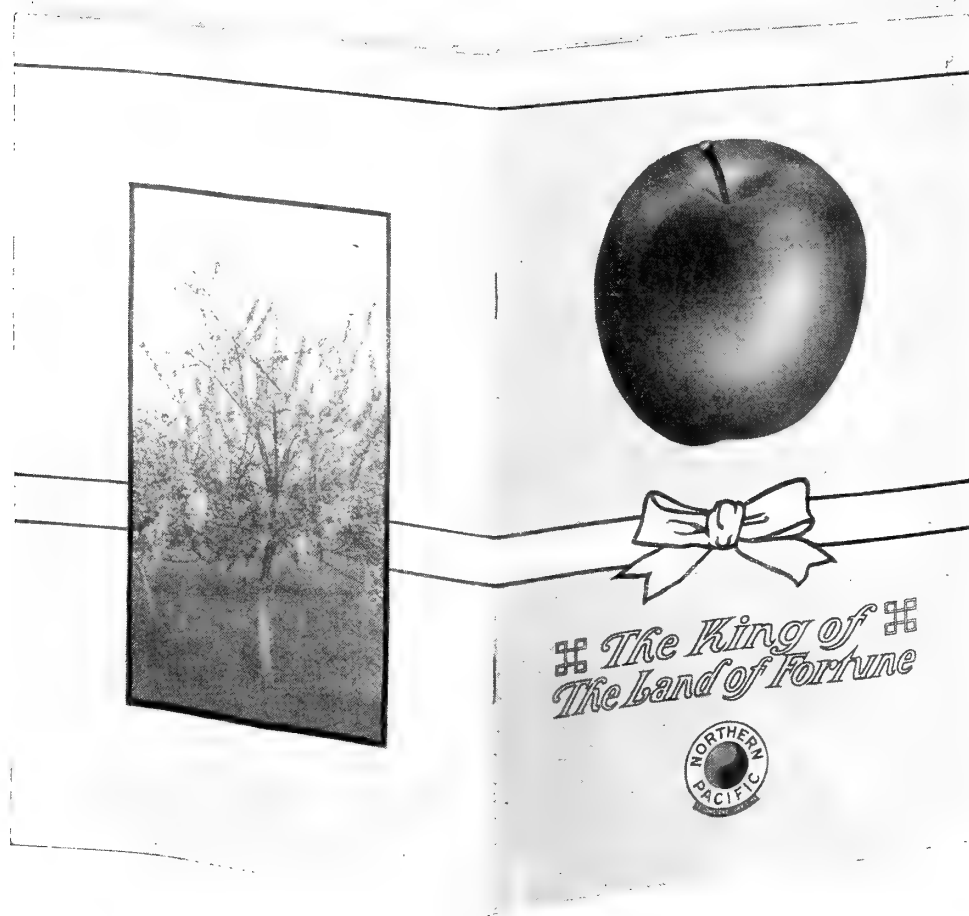
MANUFACTURERS OF HIGHEST GRADE INSECTICIDES AND FUNGICIDES

MAIN OFFICE---707 CANAL ROAD, CLEVELAND, OHIO

This valuable 120-page Book,  
"Spraying—A Profitable Investment,"

SENT FREE





## All About the Apple and the Valleys Where it Grows

Here is a book **worth money** to you. It will tell you of the profits to be made in apple growing in the Northwest. It is full of facts, figures and pictures. It is a valuable book to get and a pretty book to keep. It will be mailed to any address upon receipt of four cents in stamps. Just say you are interested in fruit culture and want to learn what the Northern Pacific country has to offer. Write to either one of these:

A. D. CHARLTON, Ass't Gen'l Pass'r Agent, 255 Morrison St., Portland, Oregon  
L. J. BRICKER, General Immigration Agent, St. Paul, Minnesota  
A. M. CLELAND, General Passenger Agent, St. Paul, Minnesota

## Northern Pacific Railway

THE SCENIC HIGHWAY THROUGH THE LAND OF FORTUNE



# Do You Spray? If so it will pay you to become acquainted with our LATEST Spraying Material

# "BLACK LEAF 40"

## THE "BIG BROTHER" TO OUR CELEBRATED "BLACK LEAF" TOBACCO EXTRACT!

That is, "BIG BROTHER" in comparative strength (being nearly 14 times stronger), but "LITTLE BROTHER" in size—having only about one-twelfth the comparative shipping weight.

This means a big saving in handling—particularly over rough roads—one 10½-pound package producing 1,000 gallons of effective spraying material against green aphis, etc.

Owing to the large dilution, neither foliage nor fruit is stained.

Like our "BLACK LEAF" EXTRACT, "BLACK LEAF 40" may be applied when the trees are in full bloom and foliage, without damage to either.

Also "BLACK LEAF 40" is perfectly soluble in water—no clogging of nozzles.

"BLACK LEAF 40" is even less volatile than "BLACK LEAF" EXTRACT, being NICOTINE SULPHATE; and is guaranteed to contain not less than 40 per cent nicotine by weight.

"BLACK LEAF 40" has been extensively tested by various experiment stations, and our free leaflet contains a strong array of expert testimony. Write us for a copy. It will certainly interest you. Use the attached coupon.

### PRICES:

10½-lb. can, \$12.50, makes 1000 gallons, containing "5/100 of 1 per cent Nicotine"

2½-lb. can, 3.25, makes 240 gallons, containing "5/100 of 1 per cent Nicotine"

½-lb. can, .85, makes 47 gallons, containing "5/100 of 1 per cent Nicotine"

*Mail us this coupon "B"*

TO SAVE YOU FREIGHT:  
WRITE US FOR THE NAME OF OUR AGENT NEAREST YOU

**The Kentucky Tobacco  
Product Co., Inc.**

Louisville, Kentucky

KENTUCKY TOBACCO PRODUCT CO.  
Louisville, Kentucky.

Please send me your free leaflet containing  
"A Strong Array of Expert Testimony." Also  
address of agent nearest my station.

My name is

My address is



# We are there

THIS is a photo of some of the trees we showed at the Third National Apple Show, Spokane, November 14-19, 1910. We did not attempt in the limited space assigned to us to show other than apple trees, and of these only ten of the leading varieties. What we did attempt to show, however, was representative samples of our standard sizes in apple trees, samples which we match up in their grades with trees delivered to our customers.

## And the "Roo-oots"

Nurserymen have become accustomed to being placed in the Ananias Club, together with real estate men, successful Western orchardists and "live wires" generally, hence it did not hurt our feelings when about nine out of ten who looked at the wonderful root system on our trees doubted our word when we told them they were developed in eight months from transplanting in the nursery. It's a fact, nevertheless, and that's one of the reasons why we lay claim to superior stock.

Soil, climate, sunshine, cultivation, moisture—the five essential elements in the production of first-class trees.

Our trees have the benefit of all. Eliminate any one and you fail to get good results. The Yakima Valley and a kind Providence supply the first three, we supply the fourth, and all three of us work together to supply the fifth. The result is found in our perfectly rooted, fully matured trees, which are entirely free from pest or disease, the latter due to our isolation from old pest-breeding orchards or forest trees, such as are found in many less favored localities.

This month (January, 1911) we are in the midst of our winter grafting, which will include over two and a half million apple and crab and about 250,000 pear. Our scions are procured from bearing orchards, and this year we grew all our own seedling stock, the finest we have ever used.

We welcome visitors at any time. There's always something of interest going on here, winter and summer. Order, system and efficiency get bigger results in the nursery business than in many other industries, and you, the customer, should know that the nursery from which you obtain your trees has all three. It's our pride to grow the best. Our customers can tell you better than can we whether or not we make good.

PLACE YOUR ORDER NOW FOR SPRING DELIVERY  
IF OUR SALESMAN MISSES YOU, DROP US A LINE

# Washington Nursery Company

TOPPENISH, WASHINGTON

*Salesmen Everywhere*

*More Wanted*

## COMPETITION OUR STRONGEST ADVERTISEMENT FOR

# THE TROUTMAN ORCHARD HEATERS



The one great issue in orchard heating is the question, "HOW MUCH HEAT WILL A HEATER PRODUCE FOR THE QUANTITY OF FUEL CONSUMED?"

The Troutman Orchard Heaters, owing to the center draft combustion, give fifty per cent more heat for every gallon of oil consumed, than any other device on the market.

There are many things to be considered in purchasing an orchard heater, but the "Consumption of Fuel" is the all important point, and all other matters fade into insignificance in comparison with this one vital feature. The Troutman Heaters equal, if they do not surpass, all other devices in regard to the small details that go to make up an orchard heater. AND IN THE ALL IMPORTANT POINT, THAT OF FUEL CONSUMPTION, they outstrip all other devices. **THEY HAVE NO EQUAL.**

Our competitors realize this, and they know they cannot meet us on this ground, and, therefore, they dodge the main issue, bringing the "trivial" features into the limelight, in the hope of deceiving the growers as to the great question.

The Troutman Heaters are perfected in every detail of construction, and there is no heater that is manufactured with greater care, or that will last longer in practical work. The base protects the bottom of the heater from coming in contact with the ground, which would have a tendency to rust the heater, making it worthless.

So as to meet all requirements of the orchardists, under all conditions, we manufacture heaters holding from five quarts to six gallons, and that burn without refilling as long at thirty-five hours.

Our heaters are equipped with wind-proof covers. Our galvanized heaters will last double the length of time and cost but slightly more than plain black iron heaters. Our small fruit attachment is the only heater devised for the protection of small fruits and vegetables.

In an attempt to sell their device some of our competitors, not being able to meet us squarely on the ground of efficiency, are endeavoring to discredit our heater in some of the minor details. These statements in regard to the Troutman Heaters are absolutely false, and have no foundation, except questionable business methods.

Has a reader of "Better Fruit" ever known of a business being a success that was carried on by knocking a competitor? We do not know of a single case.

We wish to caution the growers against advertisements full of "knocks." No concern will ever knock if their article will stand the test of practical work.

It has never been necessary for us to belittle a competitor to sell our goods. We believe in conducting our business in an honorable manner. We wish to state right here that whenever any orchard heater company wishes a competitive test we are perfectly willing to enter. All that is necessary is to address us at Canon City. Such a communication will receive our prompt attention. We do not believe in issuing challenges, as ninety-five per cent of the challenges issued are for effect only, and the growers know it.

In response to a challenge, however, in the November issue of this paper, we wrote the letter printed below. The accompanying table shows an official test between our heater and this other, made several years ago. Affidavits as to this record can be obtained by writing to the chairman of the orchard heating committee of this place, Mr. James Turnbull.

**THE TIME HAS COME. WHAT ARE YOU GOING TO DO?**

The time for discussion has passed; the time to act is here! Frost will not wait for you to get ready. You must be prepared before your fruit buds are in danger.

By placing your orders now you will insure prompt delivery. The Troutman Heaters stand as the "World's standard of efficiency and economy." They are in use in thirty states and several foreign countries. Our customers are numbered among the most prominent growers of the age. Send for our year book, price list, and bulletin of the government's endorsement, then send us your orders for heaters, rapid lighters, and thermometer alarms.

### Rules for Competitive Orchard Heating Tests

#### How Orchard Heating Tests Should Be Made

First, select an orchard where there is at least five acres exactly alike as to the number of trees to the acre, age of trees, etc.

Second, give each kind of heater one acre of ground to heat.

Third, see that the blocks of heaters are not within 200 feet of each other, to prevent any possibility of one block affecting the other.

Fourth, give each block of heaters 100 gallons of oil, and fill each heater with same quantity of oil.

Fifth, place the number of pots to the acre that is recommended by the manufacturer.

Sixth, place the heaters at equal distances over the acre.

Seventh, continue the test for six hours.

Eighth, use nothing but government, or government registered thermometers, and see that all are compared with one another.

Ninth, use at least three thermometers to the block.

Tenth, place one thermometer in the very center of the center square of heaters in each block. Place the other two thermometers wherever desired, but be sure they are in the center of the square of heaters it occupies, and be sure the thermometers are hung in the corresponding square in each block of heaters. See that the thermometers are hung the same distance above the ground in each case.

Eleventh, take temperature readings at least once every half hour.

Twelfth, measure any oil that may be left over after the six hours' burning.

Thirteenth, make the test on a still night. A repetition of the test may be desirable on another night.

Let the result of the test be the average temper-

ature during the six-hour period, and the amount of oil consumed.

In placing your outside thermometers have two or three, placed on different sides of the heated block, not closer than 200 feet to any heated block.

Our committee found that to get accurate results the above rules had to be adhered to.

*Published by permission of the Committee on Orchard Heating, James Turnbull, chairman, 1908.*

Canon City, Colorado, Nov. 29, 1910.  
The Frost Prevention Company,  
214 Balboa Building,  
San Francisco, California.

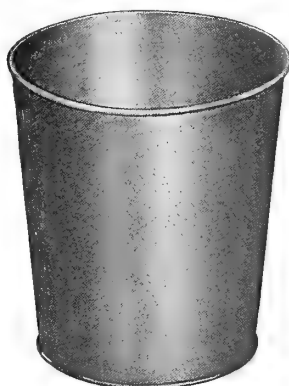
Gentlemen: We notice in the November issue of "Better Fruit," on page 67, your challenge to all orchard heater companies to a demonstration with not less than 300 heaters. We also notice in the "California Cultivator" of November 17, on page 470, your statement that your competitors have refused to compete with you.

We take pleasure in accepting your challenge for a competitive test; said tests to be made by disinterested parties and along the lines of the rules which we enclose. These rules are compiled with a view of being fair to all.

The test should be made along the lines of how much heat each heater will produce with a certain quantity of fuel.

At any time you desire, we will be pleased to have your representative meet our representative and arrange the details of said competitive test. Yours truly,

The Round Crest Orchard Heater Co.



## LARD PAIL HEATERS

### PRICE TWELVE CENTS

This heater is the equal of all other heaters not having the center draft. That is to say, it will produce the same amount of heat for every gallon of oil that other devices do.

Professor O'Gara says in his article in October "Better Fruit" that **THE LARD PAIL HEATER IS THE EQUAL OF THE BOLTON OR OTHER SUCH HEATERS.** Then why buy a more expensive heater. This heater holds five quarts of oil. If you want a cheap heater buy this one.

### HEATING TEST

Made at Canon City November 21, 1908, by  
Orchard Heating Committee.

Test made on two separate acres, 100 pots to the acre. One-half Troutman pots and one-half Bolton pots were used. All pots placed at equal distance apart and all filled with one gallon of oil.

Registered thermometers used, hung in the center of a square of pots, hung inside and outside of the heated area, as per following headings. All pots lighted at 7:40 p. m. Rows of pots, north and south; Troutman to the west, Bolton to the east. Slight westerly wind. Temperature of outside air registered by thermometer several hundred feet west of pots.

Ground frozen and trees bare of all foliage, making it harder to raise temperature than when trees are in bloom or leaf.

Time	Tempera- ture of Outside Air	Center Troutman Pots	Center Bolton Pots	
			Raise	Raise
7:30	35	35	35	
8:00	33	42-9	42-9	
8:30	33	41-8	41-8	
9:00	34	39-5	39-5	
9:30	32	38-6	39-7	
10:00	26	34-8	33-7	
10:30	28	36-8	36-8	
11:00	26	34-8	33-7	
11:30	28	36-8	31-3	
12:00	29	37-8		
12:30	29	35-6		

Bolton pots burned out: At 11 p. m., 15; at 11:30, 70; at 12 midnight, all out. Troutman pots burned out: At 12:30 a. m., 6.

## THE ROUND CREST ORCHARD HEATER COMPANY, Canon City, Colorado

# THE GREAT OBJECTION

Of the average man who wants to own an Orchard Home is the fear of *isolation* and consequent lack of schools, churches and other advantages to which he and his family have been accustomed

We Have  
the Best:

Soil, Climate

Water

Scenery

Transportation

Natural  
Resources



We do not  
have:

Killing Frosts

Heavy Snows

Sand Storms

Excessive  
Heat

Severe Cold

Malaria

*We Have Overcome All the Above Objections*

In our subdivision of the magnificent *Ashland Orchard Tracts* immediately adjoining the *Beautiful and Prosperous City of Ashland* in the famous *Rogue River Valley*. A perfect tract of two thousand acres in and adjoining a city of homes and schools in a valley of sunshine and fortune

*Plats and Descriptive Matter Upon Request*

**Ashland Suburban Orchards Syndicate**

Ashland, Oregon



VOLUME FIVE

NUMBER EIGHT

10 CENTS  
A COPY DOLLAR A YEAR

# BETTER FRUIT

*FEBRUARY 1911—SPRAY EDITION*



THE  
DELICIOUS  
APPLE  
( $\frac{1}{2}$  natural size)  
Washington  
Grown  
New Mexico  
Grown  
New York  
Grown  
Colorado  
Grown  
Iowa Grown,  
from the  
original tree

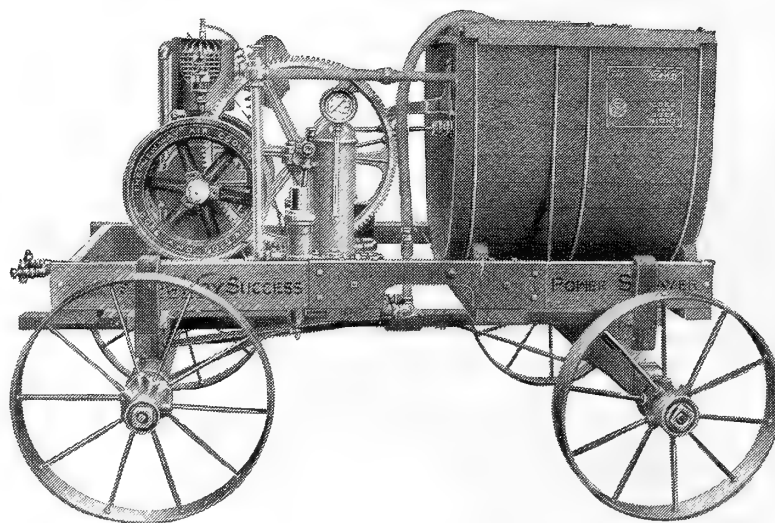
Published by  
BETTER FRUIT  
PUBLISHING  
COMPANY  
Hood River  
Oregon



# ***THE "New-Way"***



the  
light  
weight  
outfit



with the  
high  
pressure  
guarantee

## **Twin Cylinder "SUCCESS"**

IS JUST WHAT ITS NAME INDICATES

### **Light Weight**

The first high pressure, light weight outfit that has proven practical for orchards of any size. Speically adapted to hilly or soft ground.

### **200 Pounds Pressure**

Absolutely guaranteed to keep up 200 pounds pressure indefinitely. No strain on outfit, pump built to give it. 200 pounds pressure is absolutely necessary to produce the highest grade and best quality of fruit.

### **Twin Cylinder Pump**

Twin cylinders cast separately. Constant, steady high pressure. Outside packed pistons. Packing tightened by hand instantly, or replaced in five minutes.

### **Engine**

The "New-Way" air cooled. The high grade quality farm engine. Some outfits furnish the cheapest engines that can be purchased. A cheap engine spoils any sprayer.

### **The "Special"**

The "SPECIAL" is larger, has greater capacity, larger pump,  $3\frac{1}{2}$  H. P. "New-Way" air cooled engine. Built for long continuous spraying in the largest fruit districts.

### **Catalog**

Send a postal for our "Success" or "Special" catalog.

MENTION "BETTER FRUIT" AND ADDRESS

35 ASH  
STREET

**THE "New-Way" MOTOR COMPANY**  
**LANSING, MICHIGAN, U.S.A.**

35 ASH  
STREET

OR **JOHN DEERE PLOW CO.** PORTLAND  
SPOKANE



# BETTER FRUIT

*FEBRUARY 1911—SPRAY EDITION*



THE  
DELICIOUS  
APPLE  
( $\frac{1}{2}$  natural size)  
Washington  
Grown  
New Mexico  
Grown  
New York  
Grown  
Colorado  
Grown  
Iowa Grown,  
from the  
original tree

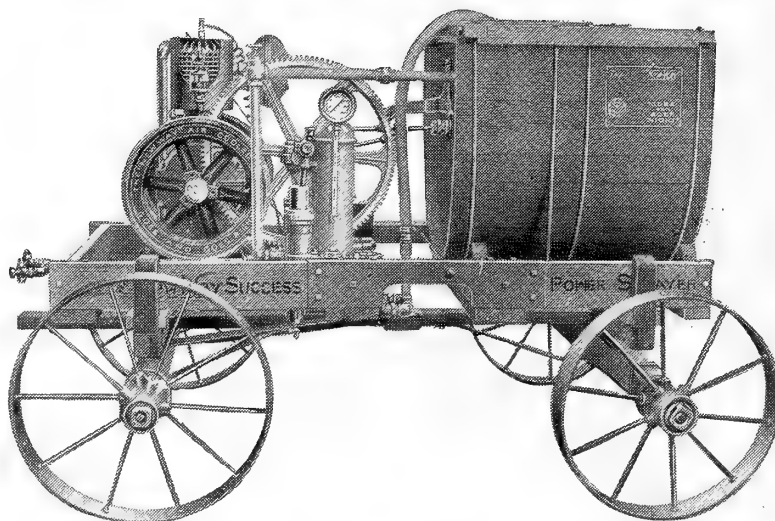
Published by  
BETTER FRUIT  
PUBLISHING  
COMPANY  
Hood River  
Oregon



# ***THE "New-Way"***



the  
light  
weight  
outfit



with the  
high  
pressure  
guarantee

## **Twin Cylinder "SUCCESS"**

IS JUST WHAT ITS NAME INDICATES

**Light Weight** The first high pressure, light weight outfit that has proven practical for orchards of any size. Speically adapted to hilly or soft ground.

**200 Pounds Pressure** Absolutely guaranteed to keep up 200 pounds pressure indefinitely. No strain on outfit, pump built to give it. 200 pounds pressure is absolutely necessary to produce the highest grade and best quality of fruit.

**Twin Cylinder Pump** Twin cylinders cast separately. Constant, steady high pressure. Outside packed pistons. Packing tightened by hand instantly, or replaced in five minutes.

**Engine** The "New-Way" air cooled. The high grade quality farm engine. Some outfits furnish the cheapest engines that can be purchased. A cheap engine spoils any sprayer.

**The "Special"** The "SPECIAL" is larger, has greater capacity, larger pump,  $3\frac{1}{2}$  H. P. "New-Way" air cooled engine. Built for long continuous spraying in the largest fruit districts.

**Catalog** Send a postal for our "Success" or "Special" catalog.

MENTION "BETTER FRUIT" AND ADDRESS

35 ASH  
STREET

***THE "New-Way" MOTOR COMPANY***  
**LANSING, MICHIGAN, U.S.A.**

35 ASH  
STREET

OR **JOHN DEERE PLOW CO.** PORTLAND  
SPOKANE





# WHAT HAS THE NORTHWESTERN FRUIT EXCHANGE ACTUALLY ACCOMPLISHED?

SINCE ITS ORGANIZATION, JULY 29, 1910  
IT HAS SOLD

## 687 Cars to Buyers in 124 Different Markets

Situated in 29 States, 2 Canadian Provinces, 5 European Countries—Germany, England, Wales, Scotland and Ireland, including 24 different cities in England, 2 in Ireland, 1 each in Germany, Scotland and Wales.

*The Widest Distribution Northwestern Fruits Have Ever Undergone  
Over 90 per cent of all Apples handled were sold F.O.B. Shipping Station*

The Exchange is preparing comprehensive statements showing average prices realized f.o.b., for each district, variety, grade and size, separately, and will be glad to furnish this information on application. The results **speak for themselves.**

The EXCHANGE is a HOME INSTITUTION—controlled absolutely by fruit growers, as well as being directed throughout by fruit growers whose interests are the COMMON INTERESTS OF THE WHOLE INDUSTRY.

The Sales Records of the EXCHANGE are OPEN TO ALL FRUIT GROWERS at all times. The location of the head offices of the Exchange makes it comparatively easy for every fruit grower to familiarize himself with the details of the EXCHANGE'S operations. The EXCHANGE wishes that every grower in the Northwest could spend a few days in its offices, seeing for himself the unremitting CARE with which his business is handled, the scrupulous INTEGRITY of its accounting, the comprehensive SCOPE of its canvass of the markets, the careful JUDGMENT which is the final test of service.

THE EXCHANGE acts as SALES AGENT FOR ASSOCIATIONS. It believes profoundly in the principal of local association, and wishes it distinctly understood that its policy is one of SUPPORT of this principle; also, that it is in thorough accord and perfect sympathy with **any** and **every** practical movement which gives promise of betterment to the fruit-growing industry.

Ownership of its stock by bona fide fruit growers' associations, and representation on its Advisory Board, are strong features of membership in the EXCHANGE.

The EXCHANGE invites correspondence from all such associations as believe in its principles and wish to inform themselves further regarding its facilities.

## NORTHWESTERN FRUIT EXCHANGE

GENERAL OFFICES: PORTLAND, OREGON

President, REGINALD H. PARSONS (President Hillcrest Orchard Co., 200 acres; Vice President Rogue River Fruit and Produce Association)

Vice President, M. HORAN (President North Central Washington Development League)

Vice President, W. N. IRISH (President Yakima County Horticultural Union)

Secretary, C. R. DORLAND

Treasurer and General Manager, W. F. GWIN (Secretary Kenmar Orchard Company)

IF YOU WANT TO  
MARKET YOUR  
**FRUIT**

RIGHT

ALWAYS SHIP TO  
**W. B. Glafke Co.**

**WHOLESALE FRUITS  
AND PRODUCE**

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**  
GENERAL COMMISSION MERCHANTS

128 FRONT STREET

PHONES: MAIN 2348  
A 2348

PORTLAND, OREGON

**Levy & Spiegl**

WHOLESALE  
**FRUITS & PRODUCE**  
*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS

Top Prices and Prompt Returns  
PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*

Livingston, Bozeman, Billings,  
Montana  
Pocatello, Idaho  
Salt Lake City, Utah

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS  
*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

WHOLESALE  
**FRUITS AND  
PRODUCE**

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of  
**YAKIMA VALLEY FRUITS  
AND PRODUCE**

Specialties: Apples, Peaches,  
Pears and Cantaloupes

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER

**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

Look Good, Taste Better, Sell Best

*Grade and Pack Guaranteed*

**Apple Growers' Union**

Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

**WHOLESALE FRUITS**

121-123 FRONT AND  
200 WASHINGTON ST.  
PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**

# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we **sell apples**. We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK

LIVERPOOL

NEW YORK

BOSTON

GLASGOW

## SIMONS, SHUTTLEWORTH & CO.

LIVERPOOL and MANCHESTER

SIMONS, JACOBS & CO.  
GLASGOWJ. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARISGARCIA, JACOBS & CO.  
LONDON

## European Receivers of American Fruits

*For Market Information Address:*Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webling  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine

OUR SPECIALTIES ARE APPLES AND PEARS

## Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

**PEACHES  
APPLES AND  
PEARS**

Solicit Your Consignments

Reliable Market Reports Prompt Cash Returns

## Ryan & Newton Company

Wholesale Fruits & Produce  
Spokane, Washington

We have modern cold storage facilities essential for the handling of your products

Reliable Market Reports

PROMPT CASH RETURNS

## LINDSAY & CO. LTD. Wholesale Fruits

HELENA, MONTANA

Established in Helena Quarter of a Century

Branch houses: Great Falls, Missoula and Billings, Montana



*Best Service and Protection is Secured by Dealing  
with Members of the*

## NATIONAL LEAGUE OF COMMISSION MERCHANTS OF THE U. S. A.

AN ORGANIZATION OF RELIABLE AND RESPONSIBLE RECEIVERS IN TWENTY-EIGHT MARKETS FOR FREE DIRECTORY OF MEMBERS, WRITE R. E. HANLEY, PUB. MGR., BUFFALO, NEW YORK

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

# W. DENNIS & SONS

## LIMITED

COVENT GARDEN MARKET  
LONDON

*and*

CUMBERLAND STREET  
LIVERPOOL

# NEW ORLEANS

The Acknowledged Fancy  
Fruit House of New Orleans

IMPORTERS  
JOBBER

# LAUX & APPEL

Wholesale  
Commission

The  
House YOU Want

All Fruits in Season

STORAGE FOR  
FIFTY CARS

# MCEWEN & KOSKEY

Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

# Spitzenbergs & Newtowns

*From the*

Hood River Valley,  
Oregon

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

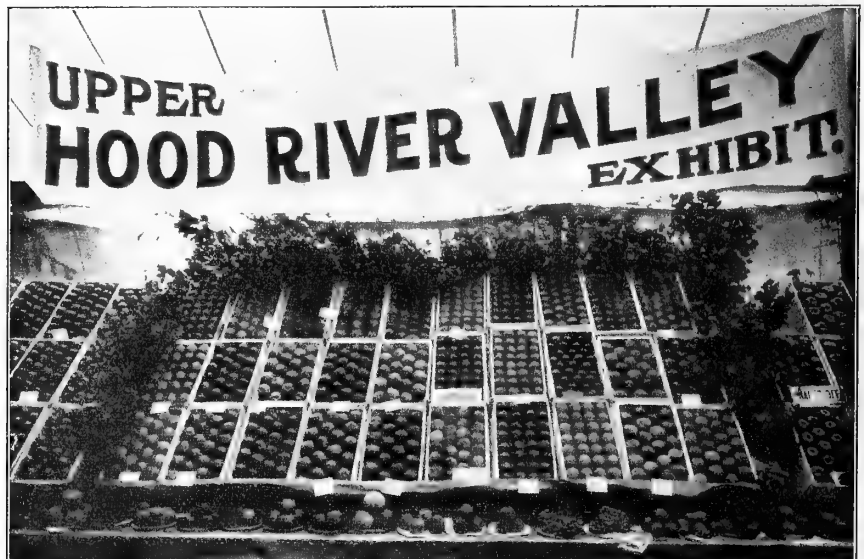
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

## Can You Beat It?

We have got land improved and unimproved that is growing such fruit that can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

# W. J. Baker & Company

Hood River  
Oregon

The oldest real estate firm in Hood River. Best apple land our specialty



# The Bond of Confidence

Reflects Upon Every Sale of Irrigated Land at

# OPPORTUNITY

## IN THE SPOKANE VALLEY, WASHINGTON



A PRODUCING ORCHARD AT OPPORTUNITY, WASHINGTON

**OPPORTUNITY** is three miles from Spokane, and offers you the greatest opportunity of your lifetime. Here you can own an orchard in the best and nearest fruit district to Spokane and become independently wealthy in a short time.

Now, we want to prove this to you. We want to put you in touch with people who are now making money at **OPPORTUNITY**, and they will tell you all about this wonderful fruit district. We have letters from them printed in our booklet.

Now, **LISTEN!** **OPPORTUNITY** is a high class fruit district, with electric lights, telephone service, splendid irrigation system, railroad facilities of the best, and all other conveniences that you could desire.

A great deal of money has been expended at **OPPORTUNITY** to make it the most ideal orchard district in the Northwest, and that's why it is such a great success.

GET THE BOOKLET TODAY

## Modern Irrigation and Land Company

P. A. SUMMERLAND, General Sales Agent

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet  
on Opportunity.

Name .....

Address .....

.....

# 320 Acre Planted Apple Orchard

## FROM ONE TO FOUR YEAR OLD, (STANDARD VARIETIES)

### At \$400 to \$500 Per Acre

Can be bought in five, ten or any size tract. Located in the Upper Hood River Valley. Have small or large tracts of improved and unimproved property in the lower and upper valley. Have also ten acres of bearing orchard for sale, located in center of Hood River Lower Valley.

G. D. WOODWORTH

*For Full Information Address*

HOOD RIVER, OREGON

# ARCADIA IRRIGATED ORCHARDS

THE CENTER OF THE RICH WASHINGTON FRUIT BELT

Arcadia is located twenty-two miles from Spokane, Washington. It's a true fruit district—with every conceivable advantage for making money in the fruit business.

Rich soil, gravity irrigation system, excellent railroad facilities, ideal climate.

**Our Plan**—We plant, cultivate, irrigate and care for your orchard for four years; we pay your taxes for five years. You can remain where you are while we bring your orchard into bearing.

Arcadia is the largest irrigation project in the West. Prices advance January 1st, 1911, so it will pay you to investigate Arcadia now. Ask for literature.

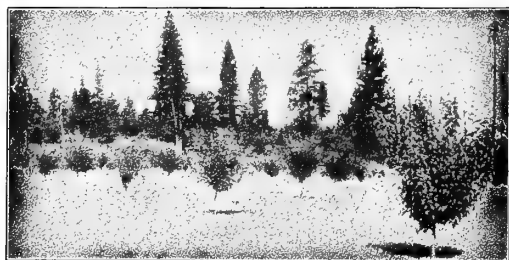
## ARCADIA ORCHARDS COMPANY

HYDE BLOCK

SPOKANE, WASHINGTON

"THE LAND WHERE THE RAIN AND SUNSHINE MEET"

## LYLE, WASHINGTON



A YOUNG ORCHARD NEAR LYLE

THE FIRST PRIZE for the best district display of non-irrigated apples was awarded the LYLE exhibit at the SPOKANE NATIONAL APPLE SHOW, 1910. This speaks for itself.

*FOR BOOKLET AND FURTHER INFORMATION ADDRESS*

## LYLE COMMERCIAL CLUB

LYLE, WASHINGTON

# \$1000

# PER ACRE NET

# \$1000



MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley, and is properly a part of it, so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

SECRETARY MOSIER VALLEY COMMERCIAL CLUB

## MOSIER, OREGON

# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water TRANSPORTATION, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this world famous apple section of the Cascade Highlands.

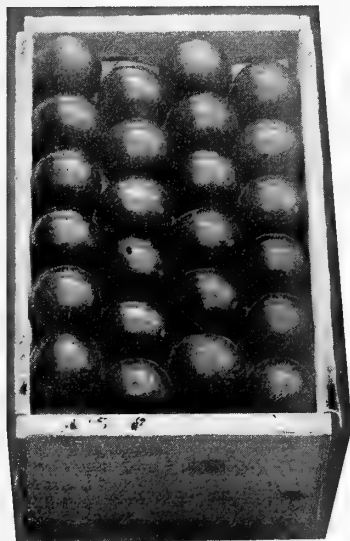
Other places of the Northwest are also profitable for orchards, but in these highlands is the place to live and enthruse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great opportunities for investment.

## Development League

WHITE SALMON, WASHINGTON

### White Salmon Realty is a Good Investment

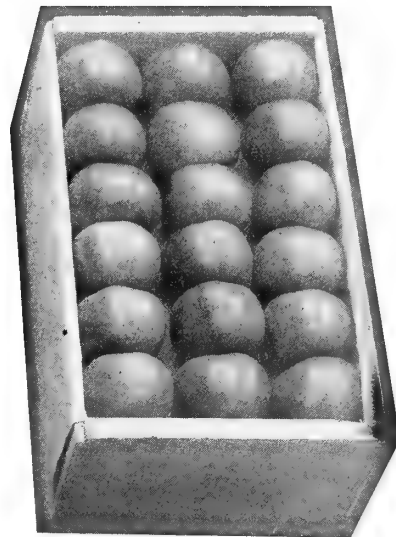


Spitzenberg  
WITHOUT IRRIGATION

### *What Eastern Commission Men Say About Non-irrigated* **APPLES**

"Your non-irrigated apples are unexcelled by even the fine apples of Hood River, and the White Salmon growers should get the very top price for their fruit in the markets of the East. This is certainly a coming apple district."—Wm. Crossley, of the firm of D. Crossley & Sons, apple exporters of New York.

White Salmon offers greater advantages than any other apple district. Why? Because there is more unimproved land to be had, at a cheaper price and on easier terms.



Yellow Newtown  
WITHOUT IRRIGATION

IF YOU ARE LOOKING FOR FRUIT LAND THAT RAISES THE ABOVE DESCRIBED FRUIT, IN ANY SIZE TRACTS, IMPROVED OR UNIMPROVED, CALL ON OR ADDRESS THE

**CONSOLIDATED REALTY COMPANY**  
WHITE SALMON, WASHINGTON

# Irrigated Orchard Tracts **Rogue River Valley**



ROGUELANDS IRRIGATED ORCHARD TRACTS

OREGON ORCHARDS ARE THE MOST FAMOUS  
IN THE WORLD

ROGUE RIVER VALLEY IS THE BEST ORCHARD  
DISTRICT IN OREGON

SOLD ON SMALL MONTHLY  
OR ANNUAL PAYMENT PLAN

The Rogue River Valley has made the apple king. It has won the national prizes at the greatest shows ever held in America. It has received the highest prices ever paid for fruit in the New York and London markets. It has been declared by government experts to be the most perfect fruit belt in the world, and has proven beyond the question of a doubt that it will be the most important fruit section in the entire country. The development of orchard tracts is very profitable. You can make \$1,000 per annum on a five-acre tract while your orchard is coming into bearing. You can clear \$500 per acre when your orchard is developed. We will sell you a five-acre irrigated orchard tract in the very heart of this wonderful orchard country, with splendid railroad facilities, near the prosperous city of Medford, planted to standard varieties of apples or pears, at \$350 per acre; \$350 cash, balance covering a period of four years. Orchards cared for during a period of five years or turned over at once to the purchaser.

Let us tell you all about the glorious country of Southern Oregon and the wonderful orchards that have made this valley famous. Write for our literature. Our references: Bradstreets and R. G. Dun.

## ROGUELANDS, INC.

FRED N. CUMMINGS, MANAGER

MEDFORD, OREGON

# Cheap Hood River Apple Lands

Arable tracts of first-class apple land can be bought for prices as low as \$50.00 an acre, easy terms. We have good offers to make in Underwood, White Salmon and Lyle, the famous Columbia River non-irrigated districts.

Unimproved land in Underwood \$150.00 an acre, one mile from station on North Bank R. R.; red shot clay soil; no rock; light timber and brush; cost of clearing \$50.00 to \$80.00 an acre. Wonderful view of Mt. Hood and Columbia River Gorge. Improved bearing orchards, 5 to 40 acres.

## JOHN LELAND HENDERSON, Inc.

Portland Office:

J. L. Henderson, 600 Chamber of Commerce.

Hood River, Oregon

# HOW YOU CAN SECURE AN ORCHARD THAT WILL PAY FOR ITSELF

These orchards are located in the deep volcanic ash fruit soil of the great Columbia River Basin, less than 100 miles from Portland, Oregon, near Mount Hood and the famous Hood River Valley, with railroad depot on the property.

If you are interested, and have a little money, write, today, for full information in regard to this opportunity, the like of which you will not have again soon, and for "How I Can Secure an Orchard That Will Pay for Itself."

## DUFUR DEVELOPMENT COMPANY

91 Third Street

PORTLAND, OREGON



# ROGUE RIVER VALLEY

Best medium climate in the United States  
Best values for the least money



Three-year-old Spitzenberg in Rogue River Valley

THE 25-ACRE TRACT of which this picture shows a portion is now four years old. Elegant Spitzenberg and Newtown Pippin trees, some of which are from ten to twelve feet high, showing a body five inches in diameter. Also contains about 2½ acres of the best one-year-old commercial pears. This is close to the beautiful Rogue River, which affords elegant fishing and boating. Entire tract is deep, free, river bottom loam soil, along a level county road, only about four miles from town, in the best bearing orchard district. This is the BEST YOUNG COMMERCIAL ORCHARD ON THE MARKET here. Can be bought for a short time, either as a whole or divided, at \$500 PER ACRE, on reasonable terms. *If you want it you will have to hurry.*  
Also have a choice list of other tracts of all descriptions.  
Elegant prospects for much additional railroad development here this season.  
For full information regarding this and other tracts, write or call on  
**A. N. PARSONS, Grants Pass, Oregon**  
References by permission: First National Bank, Grants Pass Banking & Trust Company.

JONATHANS NEWTOWNS

APPLES PLUMS PEARS PEACHES PRUNES

## WHITE SALMON VALLEY THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.  
**WHERE APPLES, CHERRIES, PEACHES, PEARS, PRUNES AND STRAWBERRIES GROW TO PERFECTION**  
A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.  
We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap. **WRITE US FOR DESCRIPTIVE MATTER AND PRICES**  
**ESTES REALTY & INVESTMENT CO.** White Salmon, Washington

SPITZENBERGS WINESAPS

BERRIES CHERRIES STRAWBERRIES NUTS

# “OREGON IS THE PLACE FOR ME”

### PORTLAND COMMERCIAL CLUB Portland, Oregon

Send me specific information about what Oregon has to offer

- |  |                                     |
|--|-------------------------------------|
| <input type="radio"/> Apple Orchardng    | <input type="radio"/> Hotels        |
| <input type="radio"/> Pear Orchardng     | <input type="radio"/> Resorts       |
| <input type="radio"/> Peach Orchardng    | <input type="radio"/> Schools       |
| <input type="radio"/> Prune Orchardng    | <input type="radio"/> Railroads     |
| <input type="radio"/> Live Stock Raising | <input type="radio"/> Towns         |
| <input type="radio"/> Poultry Raising    | <input type="radio"/> Mining        |
| <input type="radio"/> Truck Farming      | <input type="radio"/> Manufacturing |
| <input type="radio"/> Walnut Culture     | <input type="radio"/> Water Power   |
| <input type="radio"/> Wheat Growing      | <input type="radio"/> Merchandising |
| <input type="radio"/> Dairying           | <input type="radio"/> Berry Growing |
| <input type="radio"/> Timber             |                                     |

Name .....

Street .....

Town .....

State .....

That's what you'll say when you learn specifically just what opportunities Oregon can offer you in *your own line* of endeavor.

The Portland Commercial Club will lend you all the assistance within its power to make you thoroughly acquainted with the possibilities Oregon offers you in your own line. It will tell you specifically what inducements different sections of the state are offering.

In manufacturing—in dairying—in agriculture—in fruit raising—and all other lines, Oregon offers splendid opportunity for great and successful achievement.

Take out your lead pencil or pen—look down the list of industries, and in the little circle opposite the business that interests you most, make a mark, clip out the list and mail it in. In return you will receive valuable and specific information regarding those sections of Oregon peculiarly adapted to your special line. Write a personal letter. Ask questions that come into your mind. They will all be answered fully and comprehensively. Check the list now while you have it in mind.

**Portland Commercial Club**  
**Portland, Oregon**

# OKANOGAN IRRIGATION AND IMPROVEMENT CO.

*Capital Stock, \$500,000*

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of water shed on mountain streams furnish an abundant supply of water.

Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

## No Better Fruit Land in the State of Washington

A small block of stock for sale at \$75 per share, par value \$100. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

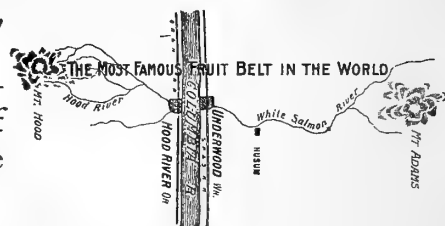
*Read descriptive article elsewhere in this issue of  
"Better Fruit"*

# UNDERWOOD

*The Gateway to the Famous White Salmon Valley*

If you want a strictly first-class location for growing high-grade fruit, close to the river and railroad, within sight of the town of Hood River, with the best of everything in the way of shipping and social advantages, call on or write

W. F. CASH, UNDERWOOD, WASHINGTON



## G. Y. EDWARDS & CO.

HOOD RIVER, OREGON

*Our Specialties:*

Fruit Lands, Orchards and Raw Lands

Get our literature and list of orchards

WRITE US FOR PARTICULARS



## ASHLAND DISTRICT of the ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent free on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.

# HOOD RIVER

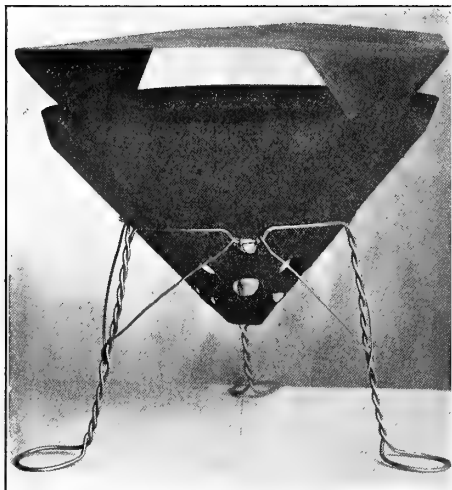
## Makes New High Records

- 1** In competition with twenty-two cars from Northwest Apple Districts. Won Sweepstakes and \$1000 cash prize.
- 2** In competition with four cars Spitzenbergs. Won Best carload of Spitzenbergs and \$250 cash prize.
- 3** In competition with four cars from Northwest Apple Districts. Won Best carload Newtowns and \$250 cash prize.
- 4** Won Association of Chamber of Commerce of Chicago, \$500 Silver Cup for Best Packed Car.
- 5** At Portland, in competition with State of Oregon, Hood River won nearly every entry in one, two, three order.

This only proves our claim of ten years standing—HOOD RIVER is the quality fruit district—the ideal location for *you*

FOR FURTHER INFORMATION WRITE THE

**Secretary, Hood River Commercial Club, Hood River, Oregon**



# The HEATER THAT MAKES GRAND VALLEY FAMOUS

Millions of dollars worth of fruit has been saved by Ideal Coal Heaters. Big crops were saved when the temperature fell as low as 16 above zero in blooming time. Sixty-five thousand Ideal Coal Heaters were used in Grand Valley alone. Many thousands are sold for spring delivery. Our Jumbo Ideal burns all night without refilling. Ideals are reservoir coal heaters, self-feeding and self-cleaning. You pay for Ideals no matter what heater you use. If you use none you pay for Ideals many times. Better use them. We have sold many of our old customers heaters this year.

**QUICK HEAT**  
**GREAT OUTWARD RADIATION**  
**VERY SMALL EXPENSE**

**GREAT VOLUME**  
**BIG CROPS SAVED**

Send 50 cents for sample. Reliable agents wanted. Write today.

The Ideal Orchard Heater Co.

Grand Junction, Colorado

## Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

## The PARIS FAIR

Hood River's largest and best store

**DRY GOODS**  
**SHOES, CLOTHING**

We are offering some extra specials in our Clothing Department. Ask to see them.

Try a pair of American Lady \$3 and \$3.50 Shoes, or American Gentleman \$3.50 and \$4 Shoes

## THINGS WE ARE AGENTS FOR

KNOX HATS  
ALFRED BENJAMIN & CO.'S CLOTHING  
DR. JAEGER UNDERWEAR  
DR. DEIMEL LINEN MESH UNDERWEAR  
DENT'S and FOWNES' GLOVES

**Buffum & Pendleton**

311 Morrison St., Portland, Oregon

# SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

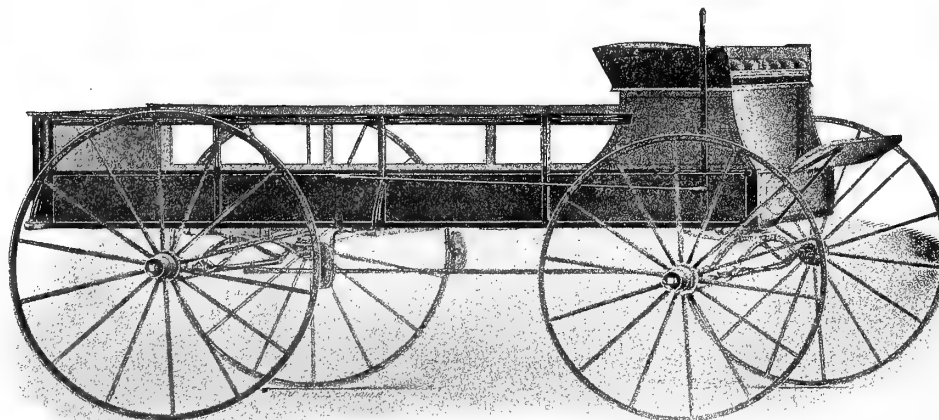
WHOLESALE AND RETAIL DEALERS IN

## *Vehicles and Implements*

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

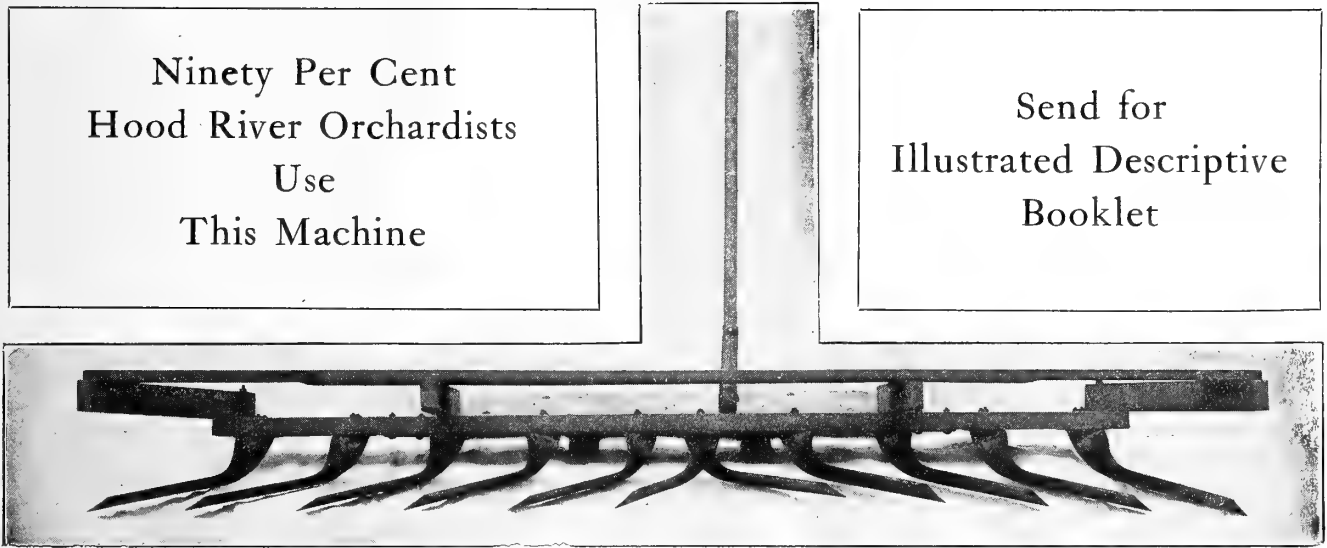


# KIMBALL CULTIVATOR

*Great Weeds and Ferns Exterminator*

Ninety Per Cent  
Hood River Orchardists  
Use  
This Machine

Send for  
Illustrated Descriptive  
Booklet



Hood River, Oregon, February 26, 1910

Mr. W. A. Johnston,  
The Dalles, Oregon

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard, *Editor "Better Fruit"*

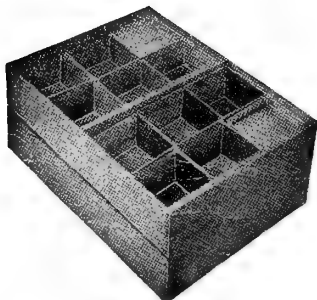
## W. A. JOHNSTON, Manufacturer

Office and Factory, 811 East Second Street, The Dalles, Oregon

Long Distance Phone, Main 3671

# "NATIONAL" FOLDING BERRY BOXES

ALL STANDARD STYLES AND SIZES WITH CRATES TO MATCH



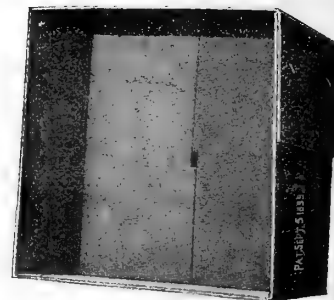
For Market

## National Lumber & Box Co.

HOQUIAM, WASHINGTON

Manufacturers of Every Known Style of Fruit Package

# BEST



For Filling



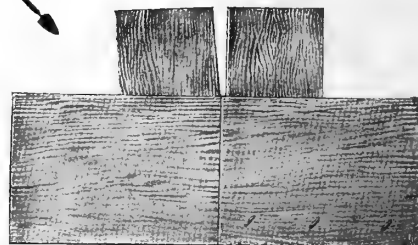
For Simplicity

OUR AGENTS

MULTNOMAH LUMBER & BOX CO.  
PORTLAND

H. J. SHINN & CO.  
SPOKANE

RYAN, NEWTON & CO.  
SPOKANE



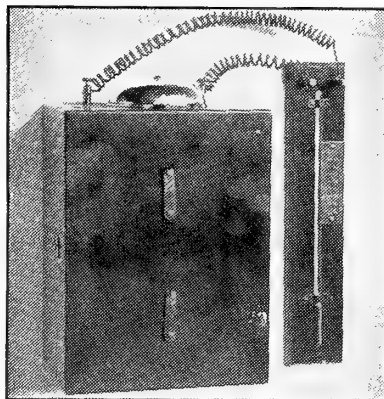
For Shipping

## BEST BERRY PACKAGE EVER PRODUCED

## Have Your Own Weather Bureau

Get a Cedarborg Frost Alarm and be sure and to get your frost warning in time. Write and let us tell you how to save money by getting your order in before the rush.

The  
**Cederborg Engineering Co.**  
808 Twentieth Street, Denver, Colorado



## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

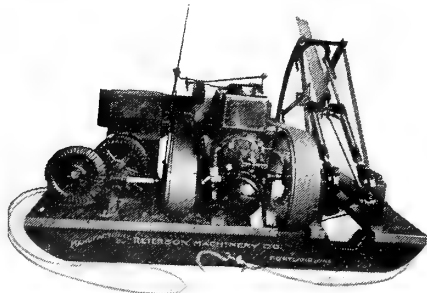
C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries,  
Plums, Prunes, Apricots, Grapes  
and Cantaloupes

Mixed carloads start about  
July 20. Straight carloads in  
season. Our fruit is the very  
best grade; pack guaranteed

We use Revised Economy Code

KING OF THE WOODS



45 CORDS SAWED  
IN ONE DAY

## POWER DRAG SAW

Saves money and backache. Weighs only 1,600 pounds, with 4-horsepower Waterloo engine, water-cooled. Can be operated by one man. Pulls itself forward and backward, up hill or down hill; lots of power and some to spare. Uses only 4 gallons distillate per day, which costs 8½ cents per gallon. Get our descriptive catalogue and prices.

**Reiersen Machinery Company**  
PORTLAND, OREGON

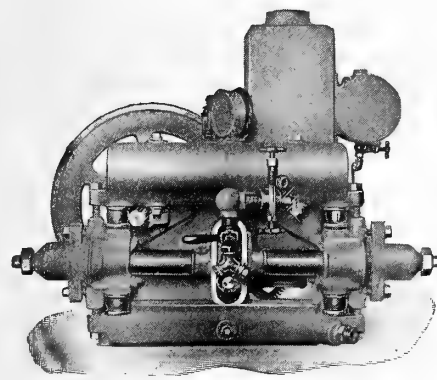
WATCH THIS  
SPACE FOR  
CUT OF OUR  
IMPROVED  
POWER SPRAYER

WRITE  
FOR  
PRICES

THE LATEST IN SPRAYING METHODS DEMANDS  
250 LBS. PRESSURE WITH CAPACITY FOR FOUR OF THE

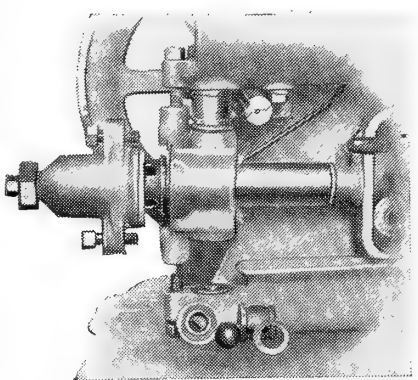
# New "Friend" Drive Spray Nozzles

To those who do not desire the Drive Spray—  
The Celebrated "Friend" Fog is available



Combined Engine and Pump

The difficulty fruit growers have experienced has been to find a power outfit with sufficient capacity, strength and durability to maintain the desired pressure without continual annoyance. All previous attempts to meet this requirement have resulted in a power equipment on the sprayer of an enormous, cumbersome weight and size. The strain between engine and pump at 250 pounds pressure demands their combined construction, thus producing the greatest degree of rigidity and strength. Misalignment of gears and other working parts caused by overstrain soon render the machine useless.

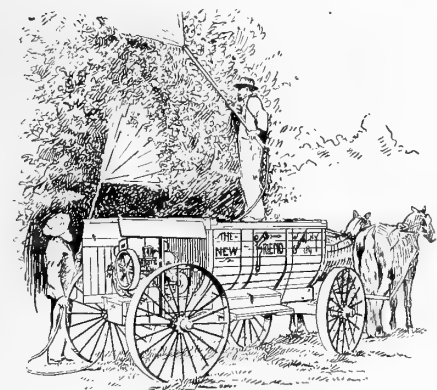


Disassembled Pump Cylinder and Valve

Here is shown the simple, compact, combined engine and pump. Note the rigid plunger alignment, the unit of construction. Less than one-half the bearings to wear that are found on complicated triplex pumps.

New packing and valve seats in five minutes. Do the work with your cuffs on if you like. Packing adjusted while pump is operating under high pressure. The "Friend" was the first complete gasoline power sprayer ever made, hence the above.

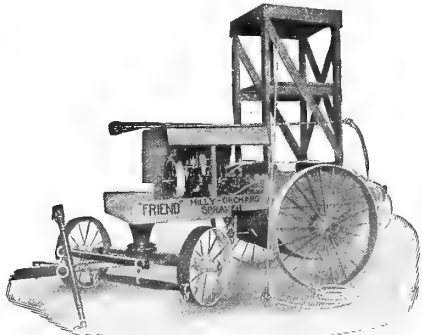
- 1. A good agitator that works without leaks and jerks, causing perfect agitation.
- 2. A nozzle throwing a fine spray twenty to twenty-five feet, either angle or straight.
- 3. A tank filler that fills the tank at 35 gallons per minute, weighing but 5 pounds. No pump.
- 4. A relief valve in which new parts can be applied in half a minute. Your hands the tools.
- 5. A smooth-running motor, transmitting its power without the "hit and miss" jerk.



Standard Orchard Outfit (Fig. 1).  
Large wheels, wide tires, easy drawing, short turning. All complete, ready for service.

## MUCH OF THE WORK ON FIVE HUNDRED 1911 Model Power Outfits COMPLETED IN THE NEW PLANT

IMMEDIATE DELIVERIES NOW  
Many 1911 Models have been and are being shipped into your own state. SPECIAL INDUCEMENTS in new territory for early business.



Hilly Orchard Model (Fig. 2).  
Low down, large rear wheels to carry load; wide tires; perfectly short turning; top of tank 3 feet 6 inches high. All complete, ready for service.

FILL OUT BLANK IN OPPOSITE CORNER AND MAIL TO

# "FRIEND" MFG. CO.

GASPORT, NIAGARA COUNTY, NEW YORK  
MANUFACTURERS OF THE WORLD'S BEST HAND AND POWER  
SPRAYERS

"Friend" Manufacturing Company:  
Please send literature.

Name .....

Address .....  
(Write plainly)

Am interested in: Fig. (1).....Fig. (2).....



Fancy Hood River Apple Pack

# HOOD RIVER

*Won the Grand Sweepstakes Prize at the National Apple Show, also First Prize on Car Load of Spitzenbergs and First Prize on Car Load of Yellow Newtowns*

This proves again the superiority of the Hood River apple. Not only do they capture first prizes wherever exhibited, but every year the Hood River apples are the first ones sold, and always bring the top prices.

Make your home in Hood River. Get in with the winners and be sure of a good profit for your labor. Send for our list of orchard tracts and business opportunities.

## J. H. HEILBRONNER & CO.

THE RELIABLE DEALERS

The Davidson Building

HOOD RIVER, OREGON

## Properties that will be worth 10 to 20% more next Spring

10-acre block of solid orchard, located  $2\frac{1}{2}$  miles from town, on main county road. All Newtowns and Spitzenbergs, 5 years old, and in the very best of condition, having had a few apples last year. There is **not a better orchard** on the West Side—nothing to compare with it at the price of \$12,000. \$5,000 cash, balance 7% interest.

15 acres  $6\frac{1}{2}$  miles from Hood River; near railway station, school and church; all set to Newtowns and Spitzenbergs, as follows: 5 acres 7 years old, 3 acres 6,  $1\frac{1}{2}$  acres 4 and  $4\frac{1}{2}$  acres 3 years old. Trees in A1 condition; picked 1,120 boxes of apples this year. Three acres of strawberries between trees. Old house, good barn. This tract is one of the best buys in the Hood River Valley at the price of \$14,000. \$5,000 cash, balance on or before five years at 7%.

20 acres, located in the heart of the East Side, all under cultivation and planted to orchard as follows: 167 Newtowns and Spitzenbergs five years old; 612 two and three years old of same variety, with Ortleys and Arkansas Blacks as pollenizers; 37 four years old, and 97 one year old of same variety; 139 one and two-year-old D'Anjou Pears; also home orchard four years old. Improved with 6-room house, good barn and other outbuildings. With the place goes complete set of farm implements; also new steam sprayer, wagon, hack and good team. The price at \$15,000 is below the market. Terms.

103 acres on edge of Willow Flat District; heavy red shot soil, south and east slope, with good drainage; 20 acres under cultivation; 10 acres set to young Newtowns and Spitzenbergs; 8 acres practically cleared, balance of place fir and oak timber. Small house and barn. The price is way below the market at \$14,000. \$3,500 cash, balance on or before seven years at 7%.

20 acres  $7\frac{1}{2}$  miles southeast of Hood River; red shot soil, good drainage, and all under the ditch; 4 acres in Spitzenbergs and Newtowns one year old; 12 acres slashed and burned, balance in fir. Price \$5,000; \$2,000 cash, balance on or before five years at 7%.

FOR INFORMATION REGARDING HOOD RIVER WRITE

## DEVLIN & FIREBAUGH

THE LEADING DEALERS

Swetland Building, Portland, Oregon

Hotel Oregon Building, Hood River, Oregon



# BETTER FRUIT

OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## SPRAYING FOR CURCULIO AND CODLING MOTH

BY ESTES P. TAYLOR, MISSOURI STATE FRUIT EXPERIMENT STATION, MOUNTAIN GROVE, MISSOURI

**T**HE name plum curculio was given this insect from its having been observed in early days as a very serious pest of the plum. It is a very old insect in this country, having been mentioned in literature as a pest more than a century ago.

Not only is its injury notorious upon plums, cherries, peaches, nectarines, apricots and other stone fruits, but it attacks the apple, pear and quince, and of native food plants it is to be found upon wild plums, crab-apples and hawthorne. Dr. C. V. Riley, the first state entomologist of Missouri, studied the insect in this state, publishing many of the details of its life history in 1869. It was even as early as this date that he recorded it as injurious to apples. Thus it has been known as an apple pest in Missouri for forty years. It seems to have been especially destructive here on this fruit about ten years ago, as noted by Dr. J. M. Stedman in his excellent bulletin upon "The Sting in the Apple," published in 1904, and has evidently grown even more destructive in recent years. In some sections of the state, notably along the Mississippi River and in parts of the Ozarks, it has been found by the writer to cause greater damage to the apple crop than the codling moth, and if the insect is considered from the standpoint of its damage to all fruits it is unquestionably responsible for greater financial loss to Missouri horticulture than any other insect present.

Most orchardists are familiar with the appearance of the adult. It is well illustrated in Fig. 1, where its different stages are also shown. It is a grayish-black "snout-beetle" measuring one-fifth inch in length and bearing two prominent humps and several smaller elevations upon its back. The beetles are not easily seen upon the trees, requiring very close observation to find them. They have the habit of other snout-beetles of dropping to the ground when disturbed and feigning death or "playing possum," as it is expressed. Some orchardists take advantage of this characteristic and capture them by jarring the trees in the early morning over sheets or "curculio catchers." The beetles pass the winter hiding about the orchard, in adjoining timber, beneath the rough bark of trees and in other places of concealment. In the spring, following the blooming of fruit trees, they emerge from hiding quarters and soon begin making their

punctures upon the fruit. Peaches, plums and cherries, being earlier to set fruit, are usually attacked first. Apples are stung first when about the size of peas or a little larger. Two kinds of injuries are made by the beetle, the round opening through the skin made in feeding and the small crescent or half-moon shaped marks made partially surrounding the pit, where the egg has been previously laid. Sometimes the beetles feed sparingly upon the foliage, eating small holes in the leaves.

for their complete development. These periods may vary somewhat with the moisture, temperature and other conditions. There is but a single generation throughout the year, the beetles which mature during the summer making some food punctures in the fruit before going into hibernation, but not laying eggs nor doing their principal damage in feeding until they emerge from hibernation the following spring.

Apple growers will be interested in the dates at which the different stages of curculio may appear in the orchard, since it is upon this that the spraying operations depend. Arbitrary dates cannot be depended upon from year to year on account of variations in weather conditions, nor can they be expected to exactly correspond for all parts of the state the same year. Comparisons of time of development of the insect with that of the fruit is consequently of much greater value.

In 1908, at Olden, a point in the Ozarks, at an elevation of about 1,200 feet, no adult curculio could be jarred from apple on April 20. At this date the calyces of Jonathan were well formed tubes, and Ingrams, a late blooming variety, had shed more than one-half of their petals. However, at this time beetles were to be found quite abundantly upon peaches and plums. A single beetle had been taken upon plum April 1, nearly three weeks earlier. A few egg and food punctures were found on May 5 upon apples which measured from one-fourth to one-half inch in diameter. From the time apples measure one-third inch in diameter to when they reach the size of walnuts the maximum number of both food punctures and egg crescents are being made in them, a fact which should be borne in mind in directing sprays, especially against the curculio.

In unsprayed orchards a slight increase in feeding punctures may be noticeable generally late in June or early in July, due to the emergency of the new generation of beetles. These new adults, however, feed rather sparingly in the late summer, much less voraciously than did their parent beetles in the spring, and with less appetite than they themselves will show the following spring.

Under normal conditions, where the over-wintering adults are not destroyed by orchardists, they may also feed and deposit eggs much later than indicated

### Contents

SPRAYING FOR CURCULIO AND CODLING MOTH, 19

ABSORPTION OF ARSENIC BY APPLES FROM SPRAY, 28

PREPARATION AND USE OF LIME-SULPHUR SOLUTION, 30

FUNGUS DISEASES OF FRUITS—THEIR REMEDIES, 33

INJURY CAUSED BY THE APPLE POWDERY MILDEW, 39

SPRAYING CALENDAR FOR 1911, 47

EDITORIAL, 48

PESTS UNKNOWN TO COLORADO FRUIT GROWERS, 69

The eggs hatch in from five to ten days into a tiny grub, which begins at once to bore minute channels through the tissue toward the core or in irregular tunnels leading through the flesh. The larvae are yellowish white in color with a light brown head. They are footless grubs, rarely exceeding one-third of an inch in length when fully grown. With these characters in mind they need never be confused with the larvae of codling moth.

From three to five weeks are required from egg-laying to emergency of the larvae from fruit. The pupa is formed in an earthen cell rarely deeper than two inches, and occasionally just beneath the earth's surface. If undisturbed five or six more days are spent by the larvae in its earthen cell before transforming to pupa, and from five to ten days are spent as pupa. From two to four weeks are spent from the time the larvae leave the fruit to the time the new adult beetle appears above ground, and from fifty to sixty days represents the average length of time spent in the summer

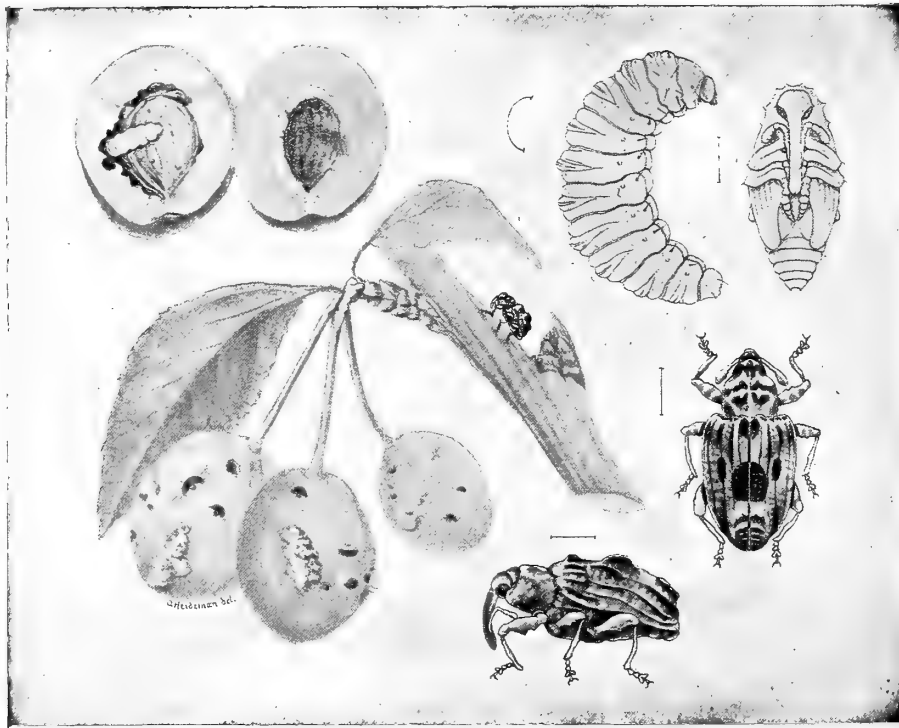


FIGURE 1—CURCULIO, ADULT AND EARLY STAGES; PLUMS SHOWING CHARACTERISTIC MARKINGS, WITH GUM EXUDATION. (After Luggar)

above. A number of over-wintering beetles were caught by the writer April 20 and confined in cages with food. One pair remained living up to August 1, a period of 103 days from capture, bringing about an overlapping of spring and fall beetles. A single female beetle under observation by the writer deposited 155 eggs extending over a period of 101 days. Neither of these records are especially exceptional. The last of August in south Missouri and the last of September in the northern part of the state will find practically all of the beetles dead and the new ones in hibernation. The last beetle jarred from apple at Olden in 1908 was on August 14, when a single specimen was found. This was nearly two months before the late apples were picked.

The injury to the surface of apples from this insect may result from the feeding punctures made by either sex or by the crescent punctures of the female. These blemishes in the skin damage the appearance of the fruit and reduce their quality and market value. The feeding punctures greatly outnumber the egg crescents. A certain percentage of the miniature apples are made to drop very early from the effect of these "stings," especially those in which the eggs hatch.

The plum curculio does not multiply readily in apples, and only a small percentage of the eggs deposited ever hatch. No larva develops to maturity in an apple which remains upon the tree. The larva boring its tortuous channel through the tissue brings the apple prematurely to the ground. If the egg hatches and the larva perishes after boring a short distance into the apple the fruit may remain upon the tree, but becomes badly gnarled and misshapen. In these cases the crescents and the openings into the larva burrows appear at the bases of deep depressions and the tissue along the burrows is changed to a greenish color and made tough and woody.

Feeding punctures made early in the growth of the apples sometimes appear later only as "specks" upon the surface and are not so objectionable as those made later. The early feeding punctures of the curculio are generally very hard to distinguish from the specks made by the codling moth larva, neither of which injure the keeping quality of the apple, nor do they detract in any great degree

from its appearance. One of the greatest losses to orchardists, due to curculio, is from the rots and fungus diseases which gain an entrance into the apple through open punctures made by these insects.

One may appreciate the capacity of the curculio for doing evil when the number of punctures capable of being made by a single pair of beetles is considered. A single male and female kept in a cage for over three months and supplied with fresh fruit made a total of 721 separate egg or food punctures. Had they been distributed singly in the apples in the orchard 4.8 bushels of apples, estimating 150 per bushel, could have received punctures from this single pair.

Orchardists who have seen apples covered with scores of such curculio food and egg punctures as shown in Fig. 2, or perhaps gnarled and knotted as shown in Fig. 3, or who have seen a majority of their apples fall to the ground as windfalls and the balance upon the trees gnarled and stung so badly by this insect as to render them completely unmarketable, need no further recital of the importance of this pest, and the present need of spraying and other control measures.

Briefly stated, the life history of the codling moth is as follows: The insect passes the winter as a worm within a tough silken cocoon, under rough bits of bark, under boards or piles of rubbish, in barrel or box material in fruit packing houses, or hidden away in various nooks and crevices about the trees. In the spring, as the warmer days come, these worms change to a brown pupae or chrysalids within the cocoons. Those upon the sunny side of the tree trunks or in the warmer locations are the first to transform. In a short time these pupae yield the moths, which, after mating, begin to deposit their eggs upon the trees—the eggs during the early egg-laying period being placed upon the upper or smooth surface of the apple leaves, but invariably upon those leaves which are borne close to fruit. Fruit growers are only too familiar with the appearance of the larva as it passes the winter or as it is found within the wormy apple. Most fruit growers are also able to recognize the pupae and the moths. These are shown in Figs. 4 and 6 and a wormy apple in Fig. 5. Orchardists are, however, less familiar with the eggs, though every fruit grower should be able to discover and know them when they



FIGURE 3—APPLES GNARLED FROM EFFECTS OF CURCULIO PUNCTURES (After Washburn, Bulletin 112, Minnesota Agricultural Experiment Station)



FIGURE 4—ADULT CODLING MOTHS, NATURAL SIZE (From Slingsland, New York (Cornell) Agricultural Experiment Station, Bulletin 142)

appear. They are illustrated upon fruit in Fig. 7. They are somewhat smaller than the head of a common pin, nearly circular in outline, slightly convex and when laid are stuck down tightly upon the surface. Without closer examination they look like minute drops of milk or specks of spray. It requires very close search to discover them, though it is sometimes possible, by turning the leaf or apple in the sun in a certain way, to make the tiny glistening egg very conspicuous. When first laid the eggs are of milky-white color. About three or four days from deposition they show the body of the larva as a reddish ring within them, and at about the fifth or sixth day the black head of the embryonic larva shows as a black spot near the center of the egg. At about the seventh day from laying codling moth eggs usually hatch. The eggs from the spring moths begin to appear when the apples are about half an inch in diameter, though at this time they are laid only upon the smooth surface of the leaves near the fruit. As soon as smooth patches appear upon the little apples, eggs may be found upon the fruit itself, and from this time forward the proportion of eggs laid upon the fruit increases. Occasionally eggs are deposited upon portions of twigs bearing apples.

The young larva upon emerging from the egg crawls about over the surface of leaves or fruit for a short time, where it sometimes feeds sparingly, then enters the apple. A majority of these first generation worms enter the apples at their calyces. At least two-thirds of the early worms enter at this point, some writers placing the ratio of calyx worms much higher from the early generation, and from counts made by the writer in Missouri last summer, 72% showed apples with worm holes at the calyx. Some of these had also holes at the side or stem, evidently made by the same larva. The larvae bore their way into the fruit push-



FIGURE 2—PORTIONS OF APPLES, ENLARGED TWO AND ONE-HALF TIMES, SHOWING "STINGS" AND SCARS FROM CURCULIO  
(From Stedman, Bulletin 64, Missouri Agricultural Experiment Station)

ing back to the opening of their burrows bits of brown voidings which appear upon the surface. They finally reach the seeds, often devouring them and much of the tissue at the core. Upon an average about 17 days are spent by these larvae within the fruit when they push the plug of brown dust from the opening into the burrow and crawl out. The full grown worm crawls to a place of concealment, where it spins a light cocoon and after a few days transforms to pupa. About two weeks are spent within the cocoon—about four days as larva and ten as pupa—when the second genera-

tion moth emerges. The moths again mate and lay eggs, which produce the second generation of worms. They very greatly outnumber those of the first generation, and so in unsprayed orchards their damage to fruit is correspondingly greater. In Southern Missouri, at least, there is a third generation of worms. In the fall, after attaining their growth, the worms leave the apples and spin their tough winter cocoons, within which they remain as larvae until spring.

The codling moth, as will be seen from what is given, passes through two, and in parts of the state, three, complete generations in Missouri each year. For the summer generation from six to seven weeks is the average length of the total life cycle.

In connection with life history observation several important dates at which the changes of the insect took place at Olden in 1908 will be of interest, though the dates would probably be some weeks later for points in Northern Missouri, and, as stated in referring to the curculio, weather conditions from one year to another will make the dates of changes somewhat variable.

The first hibernating larvae which was found changed to pupae in the orchard at Olden were on April 6, and the first moth was seen in the orchard May 5. At this date the first few scattering eggs were found on apple leaves of early blooming varieties. The first eggs were found hatched on Ingrams, May 23, when this variety measured about one-half to three-quarters inch in diameter. The maximum hatching of eggs did not take place for ten days to two weeks following, and a few stragglers were entering the apples well into the month of June. The dates at which the first generation larvae enter apples has a very important



FIGURE 5—MATURE APPLE CUT OPEN, SHOWING APPLE WORM AND ITS WORK  
Somewhat reduced. (After Quaintance, U. S. Department of Agriculture Year Book, 1907)

bearing upon the times of sprays, as will be seen later.

A few apples were found with worms escaped by June 11, and larvae preparing to pupate were first caught under burlap bands on trunks June 16. From this date forward almost up to the time the apples were picked in October, larvae continued beneath the bands. Before all the larvae of the first generation had left the apples there were some of the earliest maturing of the second generation worms fully grown and leaving the fruit, thus bringing about an overlapping of generations difficult to separate.

The first moth of the second generation was secured on June 29, and a number of others were secured during the first week of July. Early in July the first of the second generation eggs were to be found, though the maximum number did not appear for some weeks later. Moths were reared from cages, kept at approximately outdoor temperature, as late as September 4, and there is little doubt that moths were present in the orchard at even a later date, for when the Ingram apples in the check block of the experiment were picked the first week in October, there were a few very small, sluggish larvae of codling moth to be found in the fruit, retarded in their development by the cold autumn nights. Indeed, on October 7th, while the apples were being examined, what seemed to be a single freshly deposited codling moth egg was found attached to an apple. This specimen was probably one of a third generation of the insect. For the most of the state there seem to be but two annual generations as established by Dr. Riley in careful studies conducted by him forty years ago.

Everyone knows the "apple worm" and its work, the "wormy apple." Unlike the curculio, which damages the fruit both as adult beetle and as a larva, the damage from codling moth is done only by the larva. The extent of damage may vary with the stage of the apple's growth when the larva entered, with the variety infested and with various conditions.

By the time the larva has completed its development a large cavity has usually been eaten out about the core, with channels extending through the flesh leading to the surface. Apples wormy

from the side are damaged more noticeably than those wormy only at the calyx end, and since the worms that enter later are more likely to be those boring in from the side, the damage upon the fruit, besides being more abundant later, is also proportionately more in evidence. Although the appearance of apples with calyx worm holes is not so seriously impaired at first, they invariably decay when kept in storage. In fact no apple containing an open worm hole extending into the apple from any position should be packed with first class fruit. Such blemishes permit the entrance of the spores of fungi which are responsible for rot, which as a secondary loss outranks even the original damage from the insect. The larvae, when small, often eat small bits from the apple skin while starting to enter the fruit. These are to be found upon unsprayed fruit, though also abundant upon sprayed apples where the minute worms have presumably been destroyed when they attempt to enter. These small blem-

ishes, sometimes called "specks," upon the apple very closely resemble the healed-over food punctures or "stings" made by the curculio, and as shown by experiment do not perceptibly injure the keeping quality of apples when they do not extend deeper than the skin and when healed or calloused over. These codling moth "specks" on Ben Davis also sometimes grow into the characteristic "horns" mentioned as sometimes following the curculio punctures. Apples with specks from codling moth are damaged slightly in appearance, but a limited number of specks when small are usually permitted in first class fruit. They cannot be entirely prevented, even by spraying. These specks, however, in many cases without the arsenical spray, would have been the much more damaging worm holes.

Some of the so-called "June drop" is also due to the falling of apples damaged by codling moth, though in Missouri the curculio shares as a cause. Due to the two insects in badly infested orchards the majority of the fruit is brought to the ground as green or prematurely ripened windfalls.

The total damage to the fruit crop from codling moth in the United States has been estimated by Dr. Howard, of the Department of Agriculture, at \$12,000,000 each year. The tax of this insect upon apple growers in Missouri in a single year when a full crop is borne runs into the millions of dollars—a drain which with proper treatment could be largely prevented.

One of the main objects of the spraying experiment conducted was to determine the dates of spraying most suitable as a combined treatment against curculio and codling moth. Many entomologists have shown by experiment how it is possible to proceed in con-

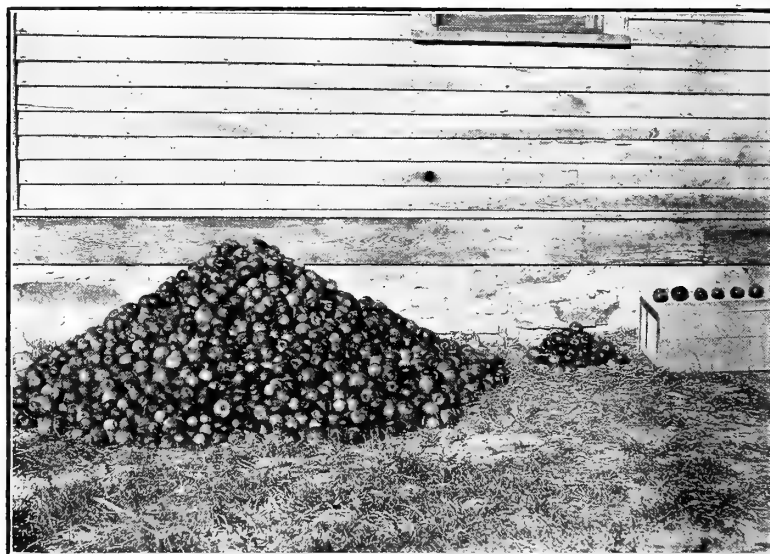


FIGURE 8—PICKED FRUIT FROM PLAT 2, SPRAYED THREE TIMES WITH LEAD ARSENATE

Apples in large pile free from curculio crescents or codling moth worm holes, 97.4 per cent; apples in small pile damaged by curculio, 2.4 per cent; six apples on box to right damaged by codling moth, 1/100 of 1 per cent.

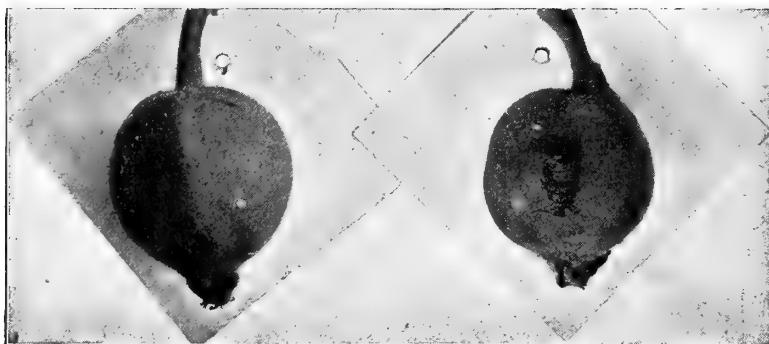


FIGURE 7—EGGS OF CODLING MOTH ON FRUIT, NATURAL SIZE  
Moth resting on fruit on left. (After Slingerland)



trolling the codling moth without reference to the curculio. The remarkably successful results of apple growers in the Rocky Mountain, Pacific and Northwestern States, in controlling codling moth are based upon methods aimed at this insect alone, since the curculio is not destructive if at all present in those sections. Missouri fruit growers must, however, make allowance for an additional and equally important factor—the curculio. There have been, upon the other hand, some very effective plans of sprays advised by entomologists, after experimental trials, to be used on apples with curculio principally in view. Since both insects have always to be dealt with in Missouri orchards it seemed that the problem was worthy of further study in perfecting sprays serving both purposes.

The orchard spraying problem in Missouri, like many of the Mississippi Valley States, is further complicated by the prevalence of several serious fungus diseases, most prominent of these being apple scab and bitter-rot. In the experiments of the writer these were taken into consideration, and in so far as they have bearing upon the sprays for the two insects under discussion they will be briefly referred to later.

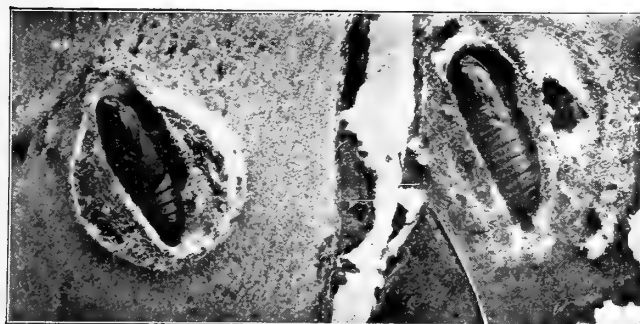


FIGURE 6—PUPAE OF CODLING MOTH IN COCOONS  
(From Quaintance, U. S. Department of Agriculture Year Book, 1907)

Spraying experiments were made in 1908 on a portion of the large commercial orchard belonging to the Olden Fruit Company, situated at Olden, in Howell County. This orchard, containing in all nearly eighteen hundred acres of fruit, lies upon the Frisco Railroad, about one hundred miles east of Springfield. It is in the Ozark region of Southern Missouri.

It was assumed at the outset that a spray of bordeaux mixture applied before bloom for the purpose of preventing scab was necessary, and a good sized block, principally of Gano, Ben Davis and Jonathan, was sprayed. A late frost destroyed the crop on the first block sprayed, and another block of Ingram was set apart. The Ingram is a very late blooming variety, which gave an opportunity of continuing the experiment as originally planned, except that the dormant spray of bordeaux mixture was not given. This did not, however, affect the plan in any way in controlling the curculio or codling moth. The block set aside was a portion about forty rows square, of a ninety-acre orchard of this variety. The oldest trees were about nine years old, but many had been

replaced by younger ones. A small plat originally forming a part of the block selected was later discontinued so that there were by actual count 1,496 trees in the experimental plat, of which 743 trees were of bearing age. One hundred fifty-three trees of bearing age were reserved without spray for comparison with those sprayed. The plats receiving the different treatments were from seven to eight rows in width and from 25 to 40 rows long, each containing from 85 to 153 trees bearing fruit. All trees in each plat were given the first spraying whether they bore fruit or not.

The dates and other details of treatment for all plats are shown in Table I, except for one plat which was set aside for testing home-made and commercial arsenates of lead, which is described later. It will be seen that in all of the principal plats ten pounds Swift's arsenate of lead was used for each 200-gallon tank; where paris green was used it was at a strength of six ounces of poison and four to six pounds of lime for each fifty gallons of water.

The spraying apparatus consisted of a Friend gasoline power outfit. The engine was of the air-cooled type, rated at two and a half horse power, geared directly to a duplex pump with propeller agitator. The pressure usually varied from 150 pounds to 225 pounds. The spraying was done both from an elevated platform and from the ground. The writer, with an assistant, Mr. C. B. Dull, handled the spray poles for all sprayings throughout the season, and aside from a teamster completed the spraying crew. For the first application, when bordeaux mixture had to be prepared, it required another man at the mixing tank.

The principal comparisons planned were the following:

(a) The comparison of early and late sprays, with early sprays only in controlling both curculio and codling moth. From summary it will be seen that Plats 1 and 2 bring out this contrast, as do also Plats 3 and 4, and the results may be seen from Tables IV, V, VI and VII.

(b) Early sprays given at short intervals with special reference to curculio control, as in Plats 1 and 2, compared with early sprays at longer intervals with reference to codling moth control as given in Plats 3 and 4. The results of this comparison may be also seen in Tables IV, V, VI and VII.

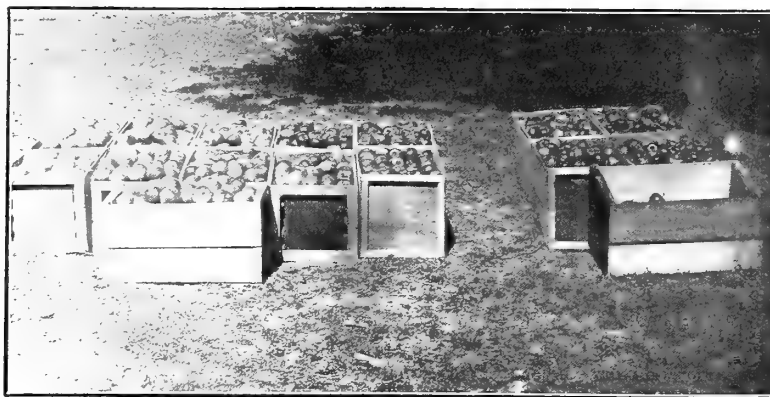


FIGURE 9—PICKED APPLES FROM PLAT 5  
No. 1's, on left, 70 per cent; No. 2's, on right, 30 per cent

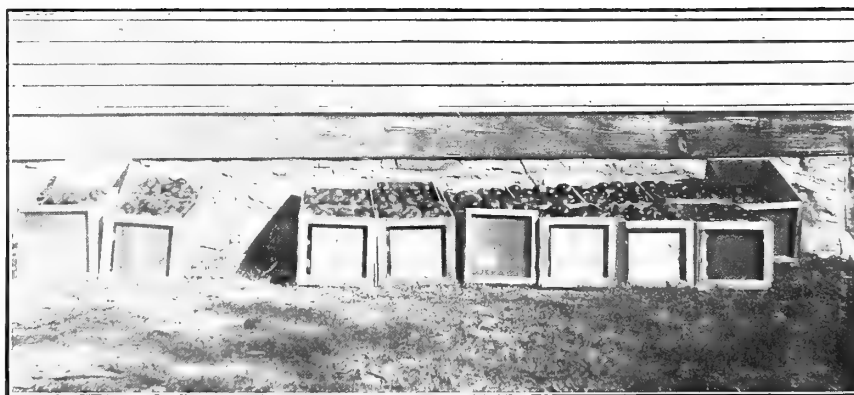


FIGURE 10—PICKED APPLES FROM PLAT 2  
No. 1's on right, 80 per cent; No. 2's on left, 20 per cent. Cash value of crop doubled by sprays

(c) Comparison between arsenate of lead and paris green, Plat 4 being sprayed with arsenate of lead upon practically the same dates as Plat 5, where only paris green was used. An exhibit of the results may be seen in Table X.

(d) Comparison of the home-made with the commercial arsenates of lead and a comparison of the efficiency of the different brands of commercial arsenates of lead upon the market.

A more disagreeable and unfavorable spring for spraying is rarely seen in Ozarks than that which prevailed in 1908, when the experiments reported were carried out. Hard, beating rains fell

#### RAINFALL DURING MONTHS OF SPRING SPRAYS (INCHES)

Day	April	May	June
1	...	...	.22
2	...	...	.44
3	...	...	.04
4	.13	.29	.64
5	1.01	2.50	.11
6	...	.46	.01
7	1.68	.05	.01
8	.64	...	.05
9	.30	...	.04
10	1.05	...	.01
11	.02	.09	...
12	...	.70	.31
13	...	.71	.68
14	.15	1.20	...
15	...	.16	...
16	...	...	...
17	.34	.09	.32
18	.01	.15	...
22	...	3.39	...
23	...	.01	...
24	1.47	...	.64
26	.98	...	...
29	1.12	.60	.20
Totals	9.06	10.24	3.72

#### RAINFALL AT OLDEN

Year	April	May	June
1908	9.06	10.24	3.72
1907	5.07	7.78	5.72
1906	4.19	2.58	3.93
1905	4.13	7.40	3.89
1904	5.59	3.90	6.61
1903	3.92	8.45	2.10

often, either so as to interrupt the spraying or immediately after spraying had been completed. A heavy rain of more than an inch fell on April 29, temporarily putting a stop to this first and most important treatment. On the same

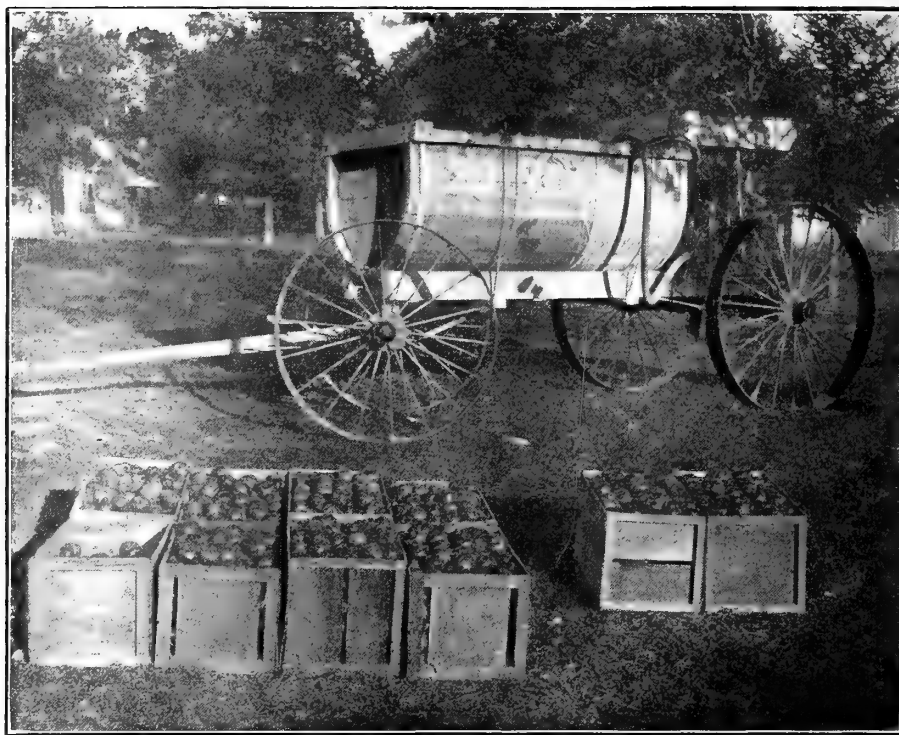


FIGURE 11—PICKED APPLES FROM PLAT 6, WHICH WAS NOT SPRAYED  
No. 1's on right, 20 per cent; No. 2's on left, 80 per cent

day of the spraying given May 12 nearly an inch of rain fell, and on the two following days an average of about an inch precipitation per day was recorded. During the month of May, when a majority of the early sprays were given, there was a total rainfall of 10.24 inches distributed over thirteen days of the month. On the 5th of May there was a down-pour of 2.5 inches, and on the 22nd 3.39 inches fell within twenty-four hours. During the month of June there were fifteen days of rainfall. The rainfall for the month of April in 1908 was 9.06 inches—greater than for any month of April in the five preceding years, for

which period the average was but 4.58 inches. The rainfall for the month of May in 1908 was almost twice the average for the five years preceding, which was but 6.02 inches.

These weather records are cited to show the unusually adverse conditions under which the results to be discussed were secured. Many times when the sprayings were given the ground in the orchard, from the almost incessant rains, was so soft that a load of the spray mixture could scarcely be hauled over it. The comparatively light weight of the power outfit used and the broad tires and high wheels of the wagon were at times the only things which prevented delays in sprays at critical seasons.

The records of the rainfall were kindly furnished by Mr. John C. Evans, Jr., manager of the Olden Fruit Company, and at present volunteer observer for the U. S. Weather Bureau.

It is a well known fact that spraying experiments, conducted against insects which fly readily for considerable distances, to represent the true value of the sprays in comparison with the trees not sprayed, must be carried on upon orchard blocks of considerable size. The plats must be of sufficient size that the trees selected from which to measure the effect of the sprays may be so remote from the unsprayed trees that the different plats will not be mutually influenced. This important factor was first taken into consideration in experiments conducted against the codling moth by Dr. Forbes in Illinois in 1887, and its bearing upon experiments against the curculio on apple was worked out by him and reported in detail in 1905.

In laying out the different blocks for spraying in the experiments at Olden this precaution for accuracy was con-



FIGURE 12—YOUNG APPLES, SHOWING ON LEFT CALYX LOBES OPEN AND IN CONDITION FOR FIRST SPRAY; ON RIGHT, CALYX LOBES CLOSED AND ALMOST, NOT QUITE, TOO LATE FOR FIRST SPRAYING  
(After Quaintance, U. S. Department of Agriculture Year Book, 1907)

considered, as will be seen by the size of the plats treated. In preparing for the counts of apples to determine the results of the spray, ten trees of uniform size and fullness, with fruit were selected as nearly as possible from the center rows of each plat. The plats being seven and eight rows wide, the trees from which all counted apples came were usually at least six rows distant from the counted trees in the adjoining plat, and in no case was there less than four rows intervening. These ten trees centrally located were selected early in the season and a record was kept of the conditions of the windfalls as accurately as possible. Twenty-five different collections of windfalls in all were made, extending from July 6 to when the fruit was picked in October. Windfall collections extended over a total of three months, with average intervals between collections of from three to four days.

The matured apples were picked from the ten average trees in each plat on October 5 to October 9, and each apple was at this time taken in hand and given critical examination for insect injuries. The results of counts are tabulated in convenient form.

Table IV shows the results secured with the use of arsenate of lead against curculio on apple. The calendar dates upon which the sprayings were done are shown in Table I and the relative dates and intervals between the sprayings in Table IV.

In plat 1 the first spraying was given immediately following the dropping of the petals, but before the calyx cups had closed. The second spraying was given ten days following, at about which time the first feeding punctures were being made in the little apples by the curculio, but before the first of the codling moth eggs had been laid. The third application followed in about ten days from the second, being aimed at a time when curculio feeding punctures were being made very abundantly and immediately preceding the appearance of the first of the hatching codling moth worms. The fourth spray in this plat was intended to be principally against the second generation of codling moth larvae, and was being applied when the first of the second generation eggs were found and about six weeks after the third treatment.

In plat 2 the spraying was in every way similar to that given to plat 1,

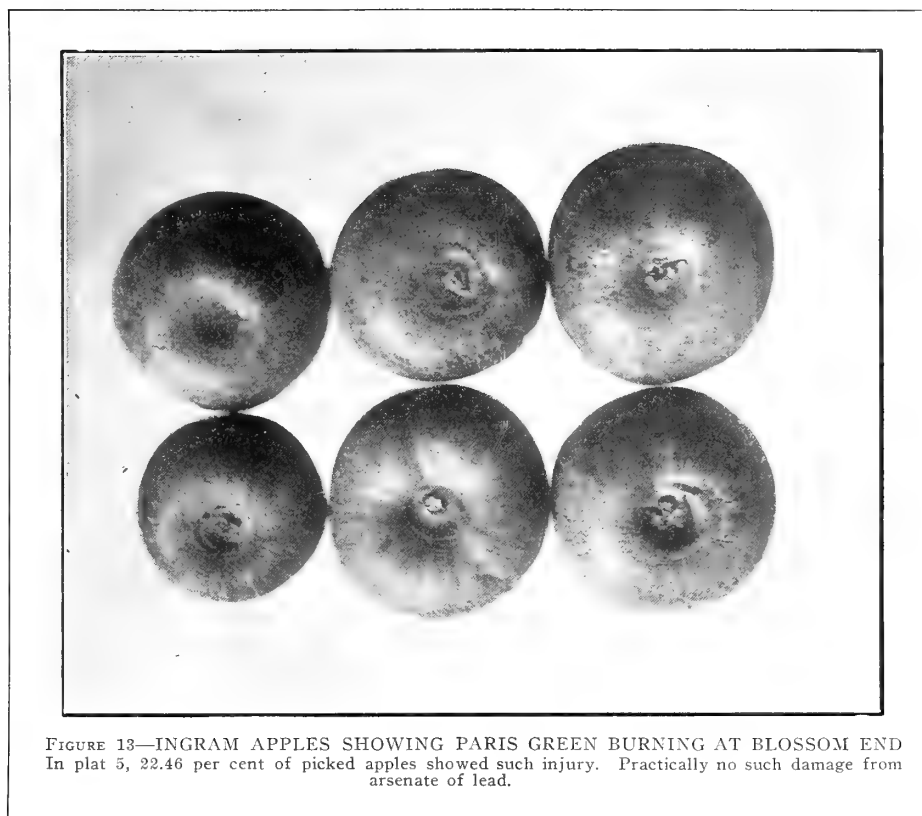


FIGURE 13—INGRAM APPLES SHOWING PARIS GREEN BURNING AT BLOSSOM END. In plat 5, 22.46 per cent of picked apples showed such injury. Practically no such damage from arsenate of lead.

except that the late spray applied in July, when the second generation eggs of codling moth were appearing, was omitted, and only the early sprays being directed with special reference to the curculio were given. As will be seen in the last column of the table, there was no benefit secured by the additional late spray. On the other hand, the three sprays applied as indicated in plat 2 gave 97.6% of the picked apples free from curculio crescents, while plat 6, the unsprayed block, gave only 54.5% free from such injuries.

In plat 3 the first spraying was given, as with the others, after the petals were off and before the calyces were closed. The appearance of the first codling moth eggs of the season was the signal for the application of the second spray, and in this season followed the first spraying about three weeks. In about two weeks codling moth eggs of the first generation were approaching maximum numbers, at which time the third spraying was given. About one month following the third spraying, eggs of the second generation codling moth were seen appearing, and the fourth spray was applied.

Plat 4 received three sprays in all, the same sprays that were given plat 3, except that the late application in July was entirely omitted. It will be seen that 96.5% of the apples at picking time in plat 3 were free from curculio, while plat 4, sprayed only three times, gave 96.2% of picked apples with no crescent injuries from curculio. The late spraying in this case was also found unprofitable, as the three early, thorough sprayings yielded within one-half of one per cent

of the results secured against curculio with the additional late spray.

As already noted, the spraying in plats 1 and 2 was done more especially with curculio in mind, and that in plats 3 and 4 with special reference to the codling moth. We find that four sprays on plat 1 after the former plan gave 97.5% picked apples free from curculio crescents, and four sprays in plat 3, after the latter plan, gave 96.5% picked apples without curculio crescents, a difference of 1% favoring the former. Again, a comparison of plat 2, receiving three sprays under the plan, also gave a better grade of fruit than three sprays after the second plan, the increase in apples free from curculio crescents being 1.4%. Thus in both sets of comparisons a slight increase in fruit free from damage by curculio was secured in plats with early sprays at short intervals. As stated, in the orchard under experiment, the curculio injuries were naturally more abundant than were those from codling moth.

Table V will show the results that were secured from the different schemes of spraying in preventing codling moth injury. The explanation of the dates of spraying of these four different plats having been given in the description of the preceding table, they may be omitted here. From Table V it will be seen that so far as controlling codling moth is concerned in this orchard, none of the sprays applied late were of any practical value, and virtually the same results were secured with only early sprays. Three sprays, applied as indicated in plats 2 and 4, each gave better than 99% picked apples free from codling moth worm holes, though it may also be seen that in plat 6 the damage to the picked apples from codling moth was only about 15%.



FIGURE 15—DIMPLES IN APPLES FROM EGG-LAYING OF TARNISHED PLANT BUG. Apples small and fuzzy. Less than one month from hatching of plant bug eggs. About half size.

No appreciable difference in the results between the applications given early in the season at short intervals, as in plats 1 and 2, and those with early sprays, at longer intervals, as in plats 3 and 4, was to be noticed.

The results of three early sprays properly applied at times indicated in plat 2 is worthy of special reference at this time. Out of 3,419 picked apples, over twelve bushels, from plat 2, only six apples could be found with worm holes from codling moth, or less than one-fifth of one per cent. So perfect was the result of these early sprayings in filling the calyx cups of the apples and preventing apples wormy at the calyx end, that from a total of 29,380 windfall and picked apples from sprayed plats, not one was found wormy at the calyx end from codling moth, while from 2,469 picked apples from unsprayed trees 268 were wormy at the calyx, or over 10%.

Table VI brings together the data for both curculio and codling moth on both windfall and picked fruit, and combines the separate results shown in Tables IV and V. Examination shows that, considering both pests, the additional late spray applied in July gave practically no increase in percentage of perfect fruit, since the three early applications in all plats had been given with almost perfect results. In no instance in the experiment where the early sprays had been applied did the additional late sprays in July pay for their added expense.

In the plats sprayed with early applications at shorter intervals, as given in plats 1 and 2, the results were slightly better than when the early sprays were separated with longer intervals, as in plats 3 and 4, though this would perhaps not have been the case had the codling moth been more abundant than the curculio. Comparing plats 1 and 2, sprayed after the former plan, with the corresponding plats 3 and 4 respectively, which were sprayed after the latter

method, the difference in each case is practically only 1%. The difference in this respect may be overlooked when the remarkable benefit secured from spraying in all treated plats as compared with the plat receiving no spray is noted. Including both windfall and picked fruit, 96.2% to 97.9% were free from all codling moth worm holes or crescent punctures from curculio. Including both windfalls and picked fruit, the unsprayed trees yielded only 58.9% free from these insect injuries. The picked fruit from

sprayed plats gave 96.1% to 97.4% free from such injury, while 46.1% of the apples remaining upon untreated trees at picking time were free from serious blemishes caused by one or the other of these insects.

On account of the wormy and stung fruit dropping to the ground before ripening, the yield of picked apples from the unsprayed plat was much less than in the plats treated. From Table VII it is seen that 45.5% of the total number of apples dropped to the ground before picking from the unsprayed trees, while from the trees in the four plats treated with arsenate of lead 24.4% of the total fruit formed dropped. The apparently rather high percentage of windfall from sprayed trees was due to the small trees, in not too vigorous condition, which were too heavily loaded, and to several high winds at times when apples were easily blown off. Notwithstanding this, an average increased yield of about 46% was secured from the four plats sprayed with arsenate of lead. From 63.3% to 65.7% were the actual ratios representing the curculio crescents and codling moth worm holes prevented, due to the spraying.

At picking time the fruit which had been examined and counted for insect blemishes was also given a careful commercial grading. The No. 1 apples were selected from each plat practically according to the standard adopted by the American Apple Growers' Congress a few years ago. No Ingram which passed through a  $2\frac{1}{4}$ -inch ring, which was poorly colored, misshapen, or which bore any important mechanical, fungus or insect blemishes was placed in the

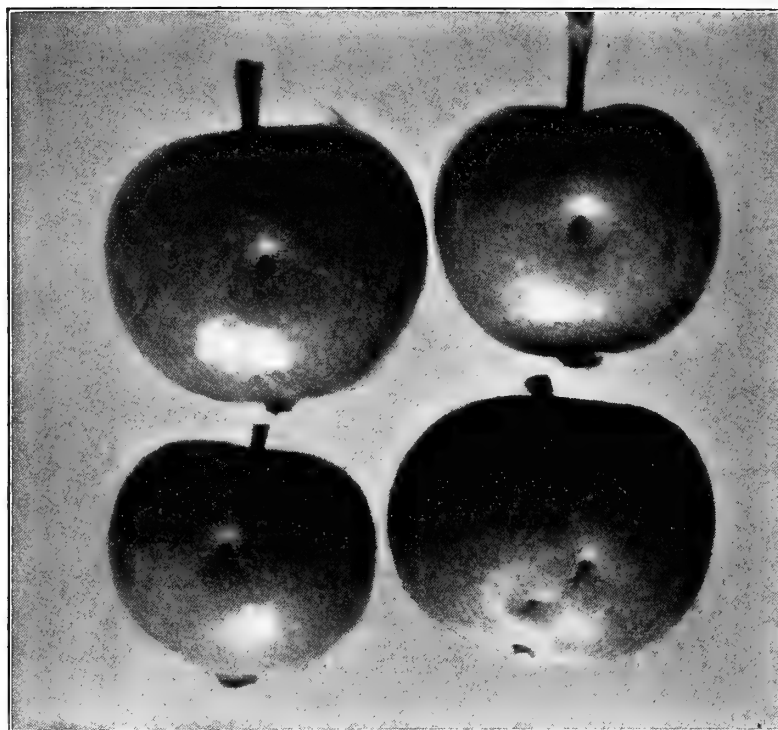


FIGURE 16—DIMPLED APPLES, AS THEY APPEARED ABOUT TWO MONTHS AFTER THE HATCHING OF PLANT BUG EGGS. NATURAL SIZE.

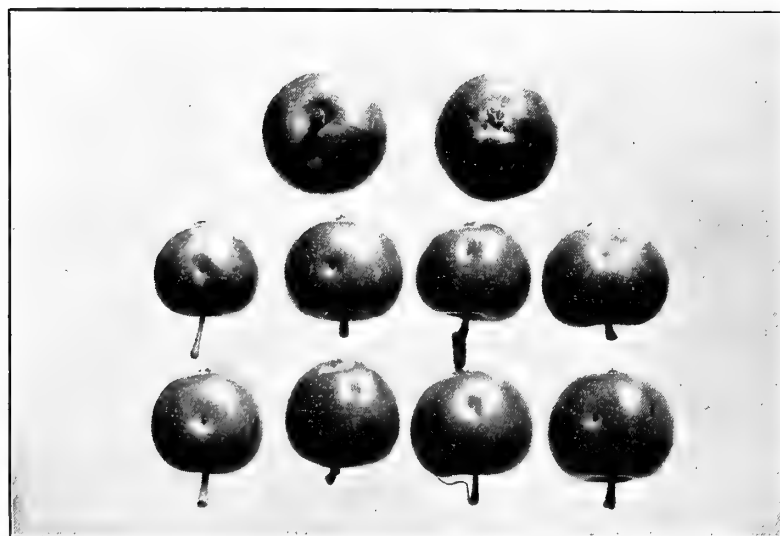


FIGURE 17—DIMPLES FROM TARNISHED PLANT BUG, AS THEY APPEARED ABOUT TWO MONTHS AFTER EGG HATCHING. ABOUT ONE-THIRD SIZE

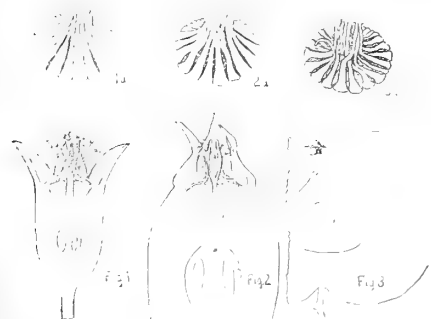


No. 1 grade. All others were placed with the No. 2 grade. This grading made it necessary to class many apples from the sprayed plats with the inferior grade simply on account of their being undersized, although the spraying had protected them from insect blemishes or fungus diseases. The No. 1 apples from the unsprayed block were greatly inferior in appearance to the first grade apples from the sprayed block, on account of their dingy, smoky surface, due to the "sooty fungus" which covered them, and which was entirely absent in the sprayed plats. The ratio of No. 1 fruit for the sprayed plats, as will be seen in Table VII, varied from 58.3% to 77.9% of the total yield, while for the unsprayed plat only 20.8% of the picked fruit could be classed as No. 1, and this was damaged in appearance from the "sooty fungus."

The first grade fruit from the experimental blocks was packed in boxes holding a little less than a bushel. Most of this brought the owner on an average about \$1.32 per bushel, while the second grade fruit brought about one-half as much. Using these prices as a basis for computation and the yield and ratio of first and second grade fruit secured from the sprayed and unsprayed plats, it was estimated, as shown in the table, that the value of the crop was doubled by virtue of three sprayings, as given in plat 2, and the increased values secured in other plats treated with arsenate of lead was almost as great.

A careful record was kept of the exact time required for each application in the experiment, as well as the amount of spray liquid used. This was done for the purpose of balancing, after the fruit had been sold, the financial returns realized with the cost of the spraying. The cost of spray materials was computed upon a basis of arsenate of lead at 12 cents per pound, blue vitriol for bordeaux mixture at 6½ cents per pound, and lime, also used in connection with the bordeaux mixture, at ½ cent per pound. In computing cost of applying the sprays, \$5.75 per day was taken as a liberal estimate for labor of team and three men, and for gasoline and oil required to operate the power outfit. This placed the wages of each man at \$1.25 per day. For the sprays, where the third man or driver was dispensed with, \$4.50 per day was taken as a reasonable

(To be continued in next issue)



Showing lower calyx cup with the fleshy stamen bars forming a roof above it, as they appear three days after the blossoms fall. Figure 1a shows the roof as it appears from above. Figures 2 and 2a show the same for an apple ten days later. Note the wrinkled condition of the stamen bars. Figures 3 and 3a show the same for a full grown apple.

By Professor E. D. Ball.

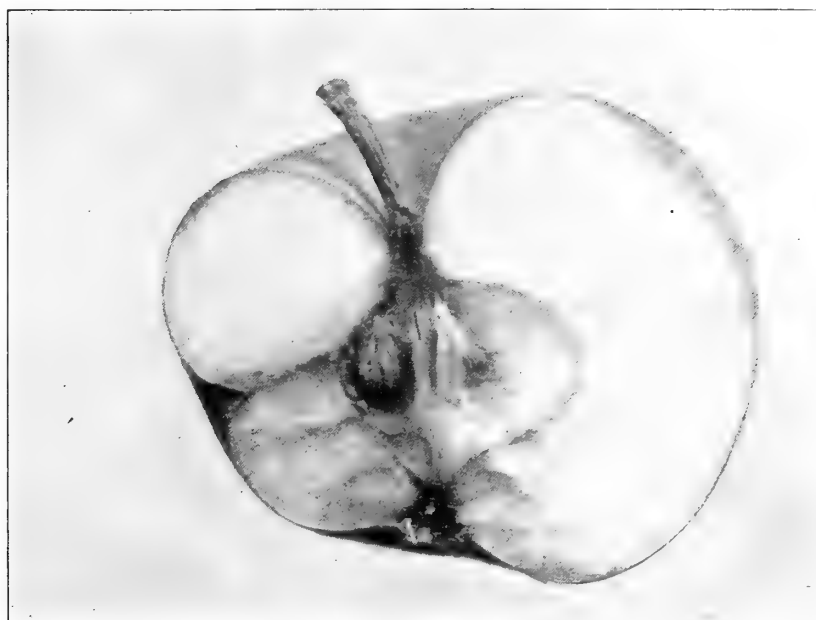


FIGURE 18—CROSS SECTION SHOWING INJURY FROM EGG-LAYING OF TARNISHED PLANT BUG, AS IT APPEARED AT HARVEST. ABOUT NATURAL SIZE

TABLE I—SUMMARY OF SPRAYING DATA IN PRINCIPAL PLATS

Plat No.	Size of Plat	Bearing Trees	First Spraying	Second Spraying	Third Spraying	Fourth Spraying	* Spray Material Used
1	25x8 rows	128	Apr. 25-May 2	May 12	May 22-23	July 10	Arsenate of lead
2	25x7 rows	85	Apr. 25-May 2	May 12	May 22-23		Arsenate of lead
3	25x7 rows	104	Apr. 25-May 2	May 26-27	June 15	July 10-11	Arsenate of lead
4	25x7 rows	117	Apr. 25-May 2	May 26-27	June 15		Arsenate of lead
5	27x7 rows	103	Apr. 25-May 2	May 27	June 16		Paris green
6	40x7 rows	153	Check; not sprayed				

\* Formulas used: Arsenate of lead, 2½ pounds to 50 gallons of water; paris green, 6 ounces to 50 gallons of water. Plats 1 to 5, inclusive, received a weak bordeaux mixture in first spray only.

TABLE IV—ARSENATE OF LEAD AGAINST CURCULIO

Dates Sprayed: Plat 1—Four sprayings: (1) Petals off; (2) About ten days later; (3) About ten days after second; (4) About six weeks after third. Plat 2—Three sprayings: (1) Petals off; (2) About ten days later; (3) About ten days after second spraying. Plat 3—Four sprayings: (1) Petals off; (2) About three weeks later; (3) About two weeks after second; (4) About four weeks after third. Plat 4—Three sprayings: (1) Petals off; (2) About three weeks later; (3) About two weeks after second spraying.

Counts of Picked Apples	Plat 1	Plat 2	Plat 3	Plat 4	*Plat 6
Total number picked	8969	3419	2189	4737	2469
Number with curculio crescents	230	85	78	180	1125
Per cent free from curculio crescents	97.5	97.6	96.5	96.2	54.5

\* Plat 6—Check; not sprayed.

TABLE V—ARSENATE OF LEAD AGAINST CODLING MOTH

Dates and number of times sprayed, same as given in Table IV.

Counts of Picked Apples	Plat 1	Plat 2	Plat 3	Plat 4	*Plat 6
Total number picked	8969	3419	2189	4737	2469
Number with codling moth worm holes	4	6	3	13	368
Per cent free from codling moth worm holes	99.55	99.83	99.86	99.87	85.50

\* Plat 6—Check; not sprayed.

TABLE VI—ARSENATE OF LEAD AGAINST CURCULIO AND CODLING MOTH

For dates and number of times sprayed, see Tables I and IV

Apples Counted	Plat 1	Plat 2	Plat 3	Plat 4	*Plat 6
Totals	10736	4564	3094	6442	4534
Windfalls	1767	1145	905	1705	2065
Picked	8969	3419	2189	4737	2469
Per cent apples free from curculio crescents and codling moth worm holes					
Totals	97.4	97.6	96.9	96.2	58.9
Windfalls	97.2	98.3	98.2	96.7	74.4
Picked	97.4	97.4	96.3	96.1	46.1

\* Plat 6—Check; not sprayed.

TABLE VII—RATIO OF WINDFALLS TO PICKED APPLES; PROPORTION OF GRADES AND VALUE OF FRUIT FROM SPRAYED AND UNSPRAYED PLATS

For dates and number of times sprayed, see Tables I and IV

Apples Counted	Plat 1	Plat 2	Plat 3	Plat 4	*Plat 6
Totals	10736	4564	3094	6442	4534
Windfalls	1767	1145	905	1705	2065
Per cent of windfalls of total	16.5	25.1	29.3	26.5	45.5
Per cent increase from spray in yield of picked fruit	64.0	45.0	36.0	40.0	....
Commercial grading of picked fruit					
Total bushels	25.4	12.2	12.2	16.5	7.2
No. 2 grade, bushels	10.6	2.7	4.2	6.5	5.7
No. 1 grade, bushels	14.8	9.5	8.0	10.0	1.5
Per cent of No. 1 grade	58.3	77.9	65.6	60.6	20.8
Curculio, codling moth injuries prevented, per cent	65.4	65.7	64.5	63.3	....
Values increased, times	1.8	2.0	1.9	1.8	....

\* Plat 6—Check; not sprayed.

(To be continued in next issue)

# ABSORPTION OF ARSENIC BY APPLES FROM SPRAY

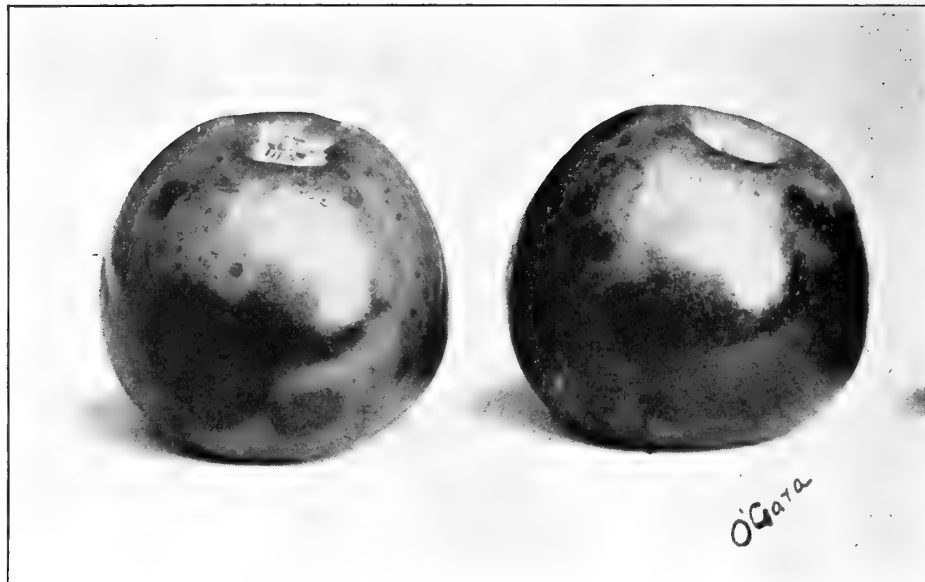
BY PROF. P. J. O'GARA, PATHOLOGIST AND ENTOMOLOGIST, MEDFORD, OREGON

**D**URING the past three years the writer has been working on a peculiar spotting of apples, which he now strongly believes to be caused by arsenate of lead. The first cases of this spotting were seen in shipments from Southern Oregon, and, later, upon investigation, it was found that the trouble was more or less general. During the past season almost every district in the United States has experienced more or less of this trouble, so that it cannot be classed as belonging entirely to the arid or semi-arid fruit belts. Some three years ago Mr. M. B. Waite, pathologist of the U. S. Department of Agriculture, called attention to the trouble, and ventured the opinion that it might be caused by soluble arsenic, or perhaps impurities in the lead arsenate. However, Mr. Waite did not make any chemical analyses in order to determine the truth of his hypothesis. About the same time the writer took up the problem, and it has been under investigation during the past three seasons. It is not the purpose of this paper to give all the experimental data, but to merely state a few of the facts that have been observed, and to give, if possible, a reasonable remedy, so as to insure against the trouble in the future. Later the matter will be published in full.

A careful examination of the spotted apples shows that only the epidermal and sub-epidermal cells are injured, so that the injury may be said to be only skin deep. The spotting may be only a peculiar red mottling, with more or less distinct outlines, or it may be entirely black, with distinct margins. It varies, however, with the different varieties, and there are all gradations of injury. This injury may appear before the fruit

is harvested, depending upon the season, but in most cases it becomes apparent only after the apples have been packed and have remained in storage for a

has been indicated above, we have found approximately the same gradations of injury, from the red coloration to the burned appearance, with this exception,



APPLES SHOWING ARSENICAL INJURY

short time. The spot in no way resembles the "Baldwin Spot," which is always to be found affecting the tissues beneath the epidermis, and which may go to a considerable depth in the flesh of the fruit. The Baldwin Spot is a physiological trouble, and is due to the abstraction of water from the cells. In the Baldwin Spot the epidermis usually remains intact, although the cells beneath it may have become disorganized. It has been thought by many that the peculiar spotting in storage was due principally to climatic or cultural conditions, or to late harvesting and over-ripeness. It has also been thought that only the fruits from weak trees, or trees grown without any cultivation, developed this trouble. However, in my experience during the past three years, I have found almost the reverse to be true. In one particular orchard, with the trees in the very best condition, and which grew prize fruit, the greatest amount of injury was found. On the other hand, an orchard of a few trees, which had received no spray treatments for the past two years, and which had received no other attention, did not develop a single spotted fruit excepting those that were purposely sprayed with a soluble arsenical for experimental purposes.

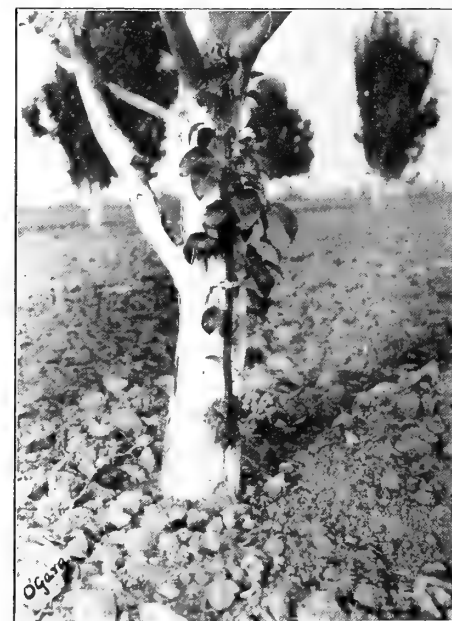
That small quantities of an arsenical in solution will tend to produce a reddish color in fruits is well known. This fact has been shown by experiments with peaches, the results being that the sprayed fruit showed a very high color externally, and, besides, the flesh was even a deep red as far as the pit. It has also been shown that the maturity of the fruit was hastened by the spray. An amount of soluble arsenic above what would produce this intense color caused burning of the fruit. In the apple, as

that the injury does not extend nearly so far into the sub-epidermal tissues.

The fact that arsenic in the soluble form may be absorbed by apples was easily shown by careful qualitative tests. These tests included not only the characteristic March test, but other tests as well. A very large number of qualitative tests were made of apparently sound, red-spotted and black-spotted apples which were known to have been sprayed with lead arsenate of certain brands. In every case appreciable quantities of arsenic were found. Specimens were



Bosc pear tree which was nearly girdled by blight. When blight was cut out less than one-quarter of an inch of living bark was left. Note the bridge grafts which saved the tree. Two crops of fruit have been grown since the blight was removed. Tree now healthy. Read article in November issue by Professor P. J. O'Gara.



Bosc pear tree showing a bad case of body blight, which has been cut out. Note the bridge graft which connects the healthy tissue above and below the limits of infection. Read article in November issue by Professor P. J. O'Gara.

then sent to the Bureau of Chemistry, United States Department of Agriculture, and careful quantitative tests for arsenic were made. The apples, upon receipt, were carefully washed and wiped off so as to remove all arsenic that might have adhered to the skin of the apples, and thus leave only the arsenic that had penetrated the tissues. Ten-gram samples of the skins of both Newtown and Spitzenbergs varieties and ten-gram samples of the apparently sound skin of the same varieties were examined for arsenic. The samples taken necessarily included not only the epidermal and sub-epidermal tissues, but a considerable amount of the flesh, which did not necessarily contain any arsenic. This was done in order to be sure that all the arsenic was taken. The result of the analysis showed that the black and red spots contained from 0.03 to 0.05 milligrams, while the apparently sound skins showed 0.025 milligrams of arsenic. No doubt the concentration of arsenic about the injured spots is much greater than analysis show, but, even with the large part of unspotted skin included in the analysis, the badly spotted fruits show approximately twice as much arsenic as the apparently sound fruit.

One analysis of very badly spotted Spitzenberg showed a quantity of arsenic, which, calculated as arsenic oxide ( $\text{As}_2\text{O}_5$ ), equaled about 0.3 milligrams, or approximately 0.005 grains. As will be seen, the amount of arsenic is rather small, and there would be no danger of serious poisoning even if such apples were eaten. However, without careful wiping, there is no doubt there might be some slight stomachic disturbances if three or four such apples were eaten at one time. The chances for poisoning are so remote, however, that they are hardly worth considering, since it is known that it requires about 0.005 grams to have a marked effect.



DURING SPRAYING TIME IN THE ORCHARD OF W. F. HURST, BOISE, IDAHO

Knowing that the apples will absorb arsenic in a soluble form, the efforts of manufacturers of lead arsenate should be toward producing a compound not only with the least amount of soluble arsenic present, but so made that any soluble sulphides, chlorides or carbonates in the water used to apply it will not cause the arsenic to go into solution. Without going into the matter technically, and which would be beyond the comprehension of the average reader, it may be stated that when disodium arsenate and lead nitrate or lead acetate are combined, under varying conditions, three forms of lead arsenate are known to occur as a result of the combination. These are the ortho arsenate ( $\text{Pb}_3(\text{AsO}_4)_2$ ), pyro arsenate ( $\text{Pb}_2\text{As}_2\text{O}_7$ ) and the meta arsenate ( $(\text{PbHAsO}_4)_2$ ). The first contains the smallest percentage of arsenic oxide ( $\text{As}_2\text{O}_5$ ), but is, nevertheless, the best combination, since it does not readily give up free arsenic in the presence of neutral and alkaline solvents. Strictly ortho arsenate of lead will be nearly pure if it contains 12½% arsenic oxide (with 50% water). Commercial samples will range somewhere near 12%, or perhaps a little less. Lead arsenate containing above 12½% to 14% arsenic oxide may be regarded as mixtures of ortho and pyro (or meta), containing from 10% to 50% of the latter compounds. Above 14% arsenic oxide the ortho content becomes almost a negligible quantity, at least this is true when the sample shows 15%. Any arsenate of lead which shows more than 16% arsenic oxide may be regarded as unimixed with ortho arsenate. These percentages are to be understood as analysis of leads having 50% water.

It is a common mistake with most growers to select that brand of arsenate of lead which contains the largest percentage of arsenate, no matter what the water content may be. Manufacturers are equally at fault in stating that the arsenic content should be high in order that it may be effective in controlling codling moth. Many brands are sold

purely on the basis of their high arsenic content without any regard to the form in which the arsenic has entered into combination with the lead. Furthermore, it is a well known fact that several brands are acid arsenates, and they could not be otherwise, considering their chemical formula. It must be understood by both the grower and the manufacturer that it is not the excessive percentages of arsenic that are wanted, but rather a timely and proper application of this important insecticide correctly compounded. Personally I would rather use an ortho arsenate containing 12% of arsenic oxide than one having three or four per cent more. I would be just as sure of results in controlling the moth, and at the same time would feel safe that no injury would result.

In closing I may say that I would advocate the use of at least one pound of lime (unslaked) with each pound of lead arsenate. This addition of lime will have a tendency to neutralize any arsenate which would otherwise have a burning effect. The use of combination sprays is certainly not prohibitive. It has been shown that the combination of lead arsenate with lime-sulphur in the control of both codling moth and scab, as well as the combination of iron sulphide and lead arsenate in the control of apple mildew and codling moth have generally resulted favorably. This is particularly true in the latter combination, which has been used to a very great extent in the Pajaro Valley, California, and to a lesser extent in the Rogue River Valley, Oregon. In the Pajaro Valley it has been shown that the addition of iron sulphide to an inferior brand of lead arsenate has really lessened the injury to the fruit and foliage. This is more or less true of any sulphur compound when mixed with the arsenate of lead.

In the preparation of this article I am particularly indebted to the U. S. Bureau of Chemistry and to Mr. W. H. Volck, horticultural commissioner and entomologist for Santa Cruz County, California, for valuable data and assistance.



SAN JOSE SCALE AND ITS WORK  
Peach twig, moderately infested, showing male and female scale. Enlarged four times

# PREPARATION AND USE of LIME-SULPHUR SOLUTION

BY J. P. STEWART, EXPERIMENTAL HORTICULTURE, STATE COLLEGE, PENNSYLVANIA

**S**PRAYING, as applied to horticulture, is just now in a state of transition. This transition involves the breaking away from bordeaux mixture and the whole list of copper sprays which have served for more than a quarter of a century as fungicides and the taking up of what may become an equal list of sulphur sprays. It also involves the abandonment of old formulas and processes for making the latter sprays and the substitution of more definite, economical and less disagreeable methods. Just how complete the transition will be can hardly be predicted now. But this much is certain, that, whereas, two years ago we might easily have told how best to spray a tree, today we must wait for further results before this question can be finally answered.

Among these coming sprays the clear concentrated lime-sulphur solution will undoubtedly occupy a leading place. In commercial form this solution already has a satisfactory insecticidal record of some seven or eight years. In the new home preparation it has an excellent record both as an insecticide and fungicide, being first used by Cordley of the Oregon Station in 1907. Realizing the importance of this work, in the latter part of 1908, the writer undertook to determine the essential features of the preparation of storable lime-sulphur solutions, and, if possible, render their use available to orchardists.

In brief, the results of this study are as follows: In the making of a storable lime-sulphur at home we must first get the formula right. This is accomplished

by using one pound of good lime, one containing 90 to 95 per cent calcium oxid and as little magnesium as possible; two pounds of sulphur and one gallon, or a little more, of water; boiling it all down so as to have about one gallon of total product at the close. This 1-2-1 formula can be made up in any quantity, merely noting that the pounds of lime and the gallons of final product are the same in number, while the pounds of sulphur are just twice as many.

The kind of sulphur may be either flour, flowers, or "powdered commercial" at least 99½% pure. The last named is probably most desirable, with the flour next, on account of cheapness and the somewhat lessened tendency to form pellets in the process of mixing.

The utensils needed are a cooker, measuring stick, strainer and hydrometer. Their total cost need not exceed \$15. They are described in detail in our Bulletin 92 of July, 1909, so that it will suffice here to say that the cooker may be of either iron or wood, and use either bottom heat or steam. If steam is used it is preferable for accurate work that it be in closed coils, rather than live steam, at least in the latter stages of the process. This is merely because it is desirable that the final volume be under control and be decreasing rather than increasing. Steam jacketed kettles with mechanical agitators are available, and they work very nicely indeed. But where storage is not considered and lower densities are permissible there is no objection to making the material with the use of live steam throughout.

In making fifty gallons of concentrate the procedure is as follows:

Materials—50 pounds best stone lime (not over 10% impurities), 100 pounds sulphur (kind stated above), reduced to 50 to 55 gallons of total product at finish.

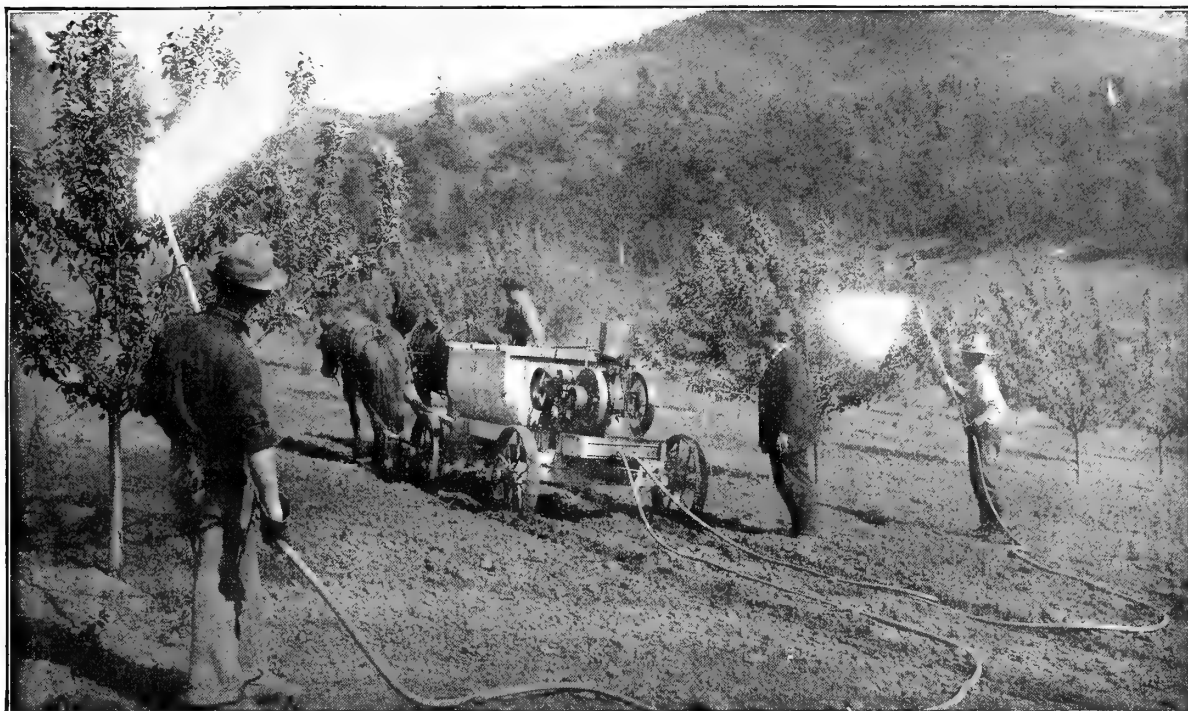
Put ten gallons of water in kettle and start fire. Place lime in kettle. After slaking is well started add the dry sulphur and mix thoroughly, adding enough water to maintain a thin paste, which requires about five gallons. After the slaking and mixing are completed add water to the height of 50 gallons on the measuring stick and bring to a boil, and stir until the sulphury scum practically disappears. Then add water (preferably, but not necessarily, hot) to the 60-gallon height and boil again to 50 gallons if storage space is limited. If it is not limited a little more water may be added the third time and boiling stopped at about 55 gallons. The material should be kept well stirred, especially during the early stages of the process, and any lumps of sulphur or lime should be thoroughly broken up.

The time of boiling should be until the sulphur granules are evidently dissolved. This fact is best determined by dipping and slowly pouring some of the material, under close observation. In many cases we have obtained as complete dissolving of the sulphur in less than forty minutes of actual boiling as was obtained by any time up to two and a half hours. In general, a period of forty to sixty minutes of actual boiling should be safe and sufficient to put the sulphur into solution. But the amount of sulphites and sul-



SPRAYING IN A BEARING ORCHARD IN THE FAMOUS YAKIMA VALLEY, WASHINGTON





SPRAYING SCENE IN THE HOOD RIVER VALLEY, OREGON

phates, and, therefore, the sediment, are undoubtedly increased by unduly prolonged boiling. Hence the amount of water added in the third addition should be so regulated as to permit the necessary boiling, and just reach the desired volume at the close. This gives the least sediment, and the regulation can be easily accomplished after a few trials.

The finished product may be immediately poured or strained into a barrel or settling tank. The straining is merely a safeguard to prevent possible clogging due to imperfect materials or failure to break lumps in the sulphur. When properly made the amount of sediment left in the strainer is insignificant. To avoid any considerable loss of materials it may be washed with part of the water used in making the next lot, simply pouring the water through the strainer into the kettle, and any lumps of sulphur discovered may be broken up and used again.

The sediment is apparently of no value as a spray material against insects, hence its volume and removal, especially in the commercial preparations, become matters of importance. It is composed very largely sulphites and sulphates of calcium, together with the magnesium, iron,

aluminum and other insoluble impurities in the lime and sulphur used. Its volume is affected chiefly by the ratio of lime-sulphur, the purity of materials and the time of boiling. Its relative volume also naturally increases with the density of the product. Made as described above its actual volume apparently runs from 5% to 9% of the total product.

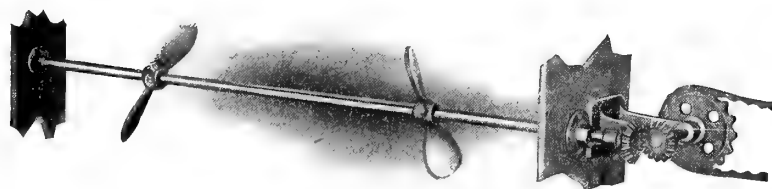
In the home preparation the difficulty of its economic removal and its fineness and apparent lack of objectionable mechanical qualities, except in displacing valuable materials, have led us to disregard it. If desired, however, it may be removed by letting the product settle for about a day, drawing off the clear portion and straining the remainder through a moderately fine cloth inside of the strainer. The sludge may then be washed free of any further valuable materials in the manner stated above.

If properly handled lime-sulphur preparations apparently can be preserved indefinitely. Ordinary changes in temperature have little effect on them. But they are very sensitive to a number of other influences. Continued exposure to air, for example, results in the development of a crust of solids of varying

thickness. This is prevented by cutting off the exposure to air, either by an oil covering or by immediate storage in tight closed vessels, filling them completely. When the crust does develop it can be skimmed off with a fine screen and readily redissolved by heating either in water or in the concentrate itself.

These solutions are also decomposed by a number of other things. Acids, carbon dioxide, certain arsenicals, and even extra lime put in as a marker, all appear more or less rapidly to break down the lime-sulphur combination. This is by no means always fatal in practical results, but we believe it is to be avoided when possible. Most of them can be avoided by elimination.

In the case of arsenicals, however, their addition is necessary if the material is to be used as a summer fungicide. The addition of arsenate of lead results in very rapid decomposition, both of itself and the lime-sulphur. The resulting compounds seem to give good results practically, however, so that we cannot entirely condemn the process just at present. But it seems to be a very wasteful process, especially when we can obtain the same poisoning power in another arsenical—the arsenite of lime—for about one-sixth the cost. The latter arsenical also is practically stable in the lime-sulphur solution. It has been in use to a greater or less extent for a long time in connection with other fungicides, but has been limited by a tendency to burn foliage. This is practically avoided by making it up with a slight modification of the Kedzie formula, the method being described in the above mentioned bulletin of the Pennsylvania Station. The use of paris green in this solution,



PROPELLER-AGITATOR USED IN POWER SPRAYERS

we believe to be undesirable, with nothing to commend it.

In the application of any concentrate, either home-made or commercial, it is essential that a definite method of dilution be followed. Two solutions may look exactly alike and yet differ widely in density, so that any accurate method must be based primarily on the density of the concentrate that is being diluted. Moreover, we believe that recommendations based on the density of diluted spray are preferable to those based on the number of dilutions, even when accompanied by a statement of the concentrate's density.

Accurate dilution is very simple and easily accomplished with the aid of a hydrometer having the specific gravity scale. Sprays of any desired density may be obtained from any concentrate by simply getting the reading of the concentrate and dividing the decimal of this reading by the decimal of the spray desired. For example, if the reading of the concentrate is 1.27 (about 31° Beaume), to get a spray of 1.03 density we divide the .27 by .03 and obtain nine, which is the number of dilutions required, and which, of course, is obtained by adding eight volumes of water. In this we are simply applying the general fact that the densities of solutions heavier than water vary inversely with the number of dilutions.

This method gives final sprays of definite density, and the importance of this is obvious when we consider the relatively small margins between safe and unsafe densities in the use of these solutions on foliage.

With Beaume hydrometers the dilutions are obtained indirectly either by conversion into the specific gravity scale or by means of a special dilution table. In the latter case, however, a table is likely to be needed for each density of spray desired.



THE PEACH BORER AND ITS WORK.  
The "borer" and its cocoon at root crown of two-year-old peach tree

The following table gives the uses of the lime-sulphur spray as far as our present knowledge extends:

While it is believed that the densities recommended in this table will generally prove efficient and safe where pure solu-

<i>Insect or Disease</i>	<i>Spraying Times</i>	<i>Density</i>
San Jose scale.....	Trees dormant, but best in fall or spring	1.03 for regular annual control; 1.04 in bad cases, especially on old apple trees
Oyster shell scale.....	At hatching time .....	1.02
Blister mite .....	Just before buds open.....	1.03 to 1.04; the latter strength for aphid eggs (Col. Bull. 133:27)
Plant lice eggs .....		
Peach leaf curl.....		
Apple and pear scab.....	(1) Blossoms beginning to show pink	1.01; may be varied by .002 or more either way, as results direct
Apple worm (add arsenical in (2) and (3))	(2) Within a week after petals fall	
	(3) About three weeks later....	
Cherry leaf spot.....	Three sprayings, a month apart, beginning with signs of infection	1.01, or slightly weaker
Peach scab and brown rot of stone fruits (experimental as yet)	(1) Three or four weeks after petals fall	1.003 to 1.005; may be varied .001 either way, as results direct. On peaches and plums, limited trials only, testing effect on foliage by applying to a few trees several days before regular applications
	(2) Half way between (1) and (3)	
	(3) Two weeks before fruit ripens	



PROFESSOR W. M. SCOTT, DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.,  
SPRAYING IN HIS PEACH ORCHARD AT SLEEPY CREEK, WEST VIRGINIA  
The "Friend" power sprayer being used

tions are used, yet occasional injury has occurred from third and fourth applications when the earlier applications of the same strength of spray had proved entirely safe. The presence of salt in some of the commercial preparations makes caution desirable in using them upon foliage. Also, the abundance of the application may frequently affect the amount of foliage injury nearly as much as the density of spray applied.

As compared with our other leading sprays, the advantages of the storable, home-made lime-sulphur are conspicuous. In total cost, including the making, it will produce a 1.03 scale spray for about three-fourths of a cent, or less, per gallon, while the commercial preparations usually cost two cents or more. The known absence of superfluous, and possibly harmful, ingredients is also of some importance. For apple scab it does not "russet" the fruit; it can be made up beforehand, and in proper strengths costs about one-quarter of a cent per gallon. Bordeaux (4-4-50), on the other hand, russets fruit, is not storable and costs about one-half cent per gallon.

# FUNGOUS DISEASES OF FRUITS—THEIR REMEDIES

BY W. S. BALLARD, DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

**T**HE successful horticulturist unconsciously acquires, by his daily association, a mental picture of what he considers a typical form of the particular kind of trees, bushes or vines he is growing. He becomes so expert in his judgment that he quickly recognizes any abnormal appearance, and immediately begins to search for the possible cause.

He is particularly interested in producing fruit that is as good, or a little better, than the best in his section, or any section that he can learn of, and he is not satisfied until he has acquired that goal, or has come as near it as possible. The disease problem is one of the chief factors that claims his attention in this endeavor to produce the best grade of fruit. With our present facilities for transcontinental shipment and the frequent introduction of fruit or plants from various parts of the world, there is an ever present possibility of introducing new pests to add to those already present, and the successful enforcement of quarantine laws is our chief protection against these foreign introductions. We may feel thankful that it occasionally happens that a new pest does not thrive in its new environment, but it frequently happens that the new environment is more congenial than the old.

When the pest problem asserts itself as a controlling factor in the agriculture of any locality the ability to grow crops then becomes largely a matter of the success of the methods of overcoming such pests, and the willingness of the growers to adopt the proper practice and carry it out thoroughly and strictly in accordance with the proper recommendations.

One of the chief methods of fruit pest control is spraying; and the investigator of these troubles is continually endeavoring to impress upon the grower the three very important factors in successful spraying: First, the proper material

must be used in the proper strength; second, the work must be done at the proper time, and, third, it must be done thoroughly and in the proper manner.

It is correctly said that the pest problem in the United States is largely instru-

fungus. The so-called California peach blight is caused by another fungus, and still another one produces peach leaf curl. Root rot is commonly caused by one of the toadstool fungi, and pear blight by one of that large group of



DEFORMED APPLES DUE TO CURCULIO PUNCTURES. REDUCED ABOUT ONE-HALF

mental in making apple growing a profitable business, for the grower who is not willing to fight soon ceases to be a commercial grower, and if there were no difficulties connected with the business the profits would be proportionately small.

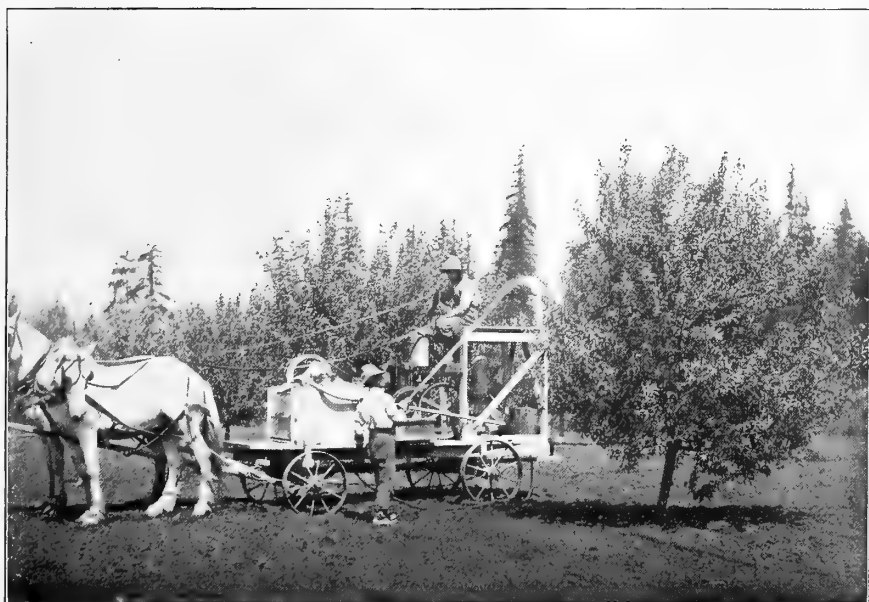
Of the various types of fruit diseases, we are concerned in this discussion with those caused by fungi. The fungi constitute a large group in the plant kingdom. They are plants just as surely as are the grape vine or the peach tree upon which some of them grow parasitically and produce disease.

Apple scab is caused by a fungus growing in the outer layers of the skin of the fruit, and also in the leaves. Pear scab is of a similar nature, but is caused by a different, though very similar,

organisms called bacteria. The fungus group is, therefore, a very large one, including, indeed, probably as many different species as all the rest of the plant world together; and when we speak of the fungus diseases of plants we refer to the diseases caused by the members of this group.

It is often supposed that rain in itself is the cause of these plant diseases, or that rain causes fungi. The progressive fruit grower is rapidly coming to realize that these are mistaken ideas. The diseases are usually produced by fungi; but the damp weather merely makes it possible for the fungus to grow, just as moisture is required to start garden seed, for the fungus plant grows from little bodies called spores, which correspond in function to the seeds of higher plants, and the rain enables these spores to germinate and give rise to the fungus plant, just as it enables corn to sprout and eventually give rise to the corn plant. The spores are microscopic in size and are easily blown about by the wind, so in an orchard or a locality where, for instance, peach blight has been prevalent we may be sure that the spores of the peach blight fungus are well distributed through the trees; and when the proper conditions of moisture and temperature arise an outbreak of the disease will occur unless spray material is already present to kill the young fungus plant as soon as the spore germinates and before it gains entrance to the peach twigs. For, once it has worked its way into the inner tissues of the bark it is protected, and no spray applied to the outside can have any effect in killing it. Thus it comes that we must spray for peach blight in the fall, before the rains set in.

The first attempts at spraying were made by the growers themselves. Such men no doubt had very little information or conception of the real nature or cause of the particular diseases they were



SPRAYING IN HUNTER'S HILL ORCHARD, WHITE SALMON VALLEY, WASHINGTON

trying to control, and they were, therefore, compelled to exercise their ingenuity in an attempt to find a remedy; and, indeed, some of the supposed remedies employed during the sixteen and seventeen hundreds were very ingenious.

Among the great array of common substances early experimented with it would be strange if some valuable remedy had not been found; and thus, in 1821, sulphur was recommended in England for peach mildew, and sulphur is today probably our best fungicide for that class of diseases called mildews. As early as 1833 we find what is essentially a weak lime-sulphur solution recommended in this country for mildews. Up to 1880, however, no very satisfactory remedies were in use for the fungous diseases, with the exception, perhaps, of sulphur in various forms, as mentioned for mildews. About 1880 a more or less systematic search for substances having fungicidal properties was taken up by French investigators, and the matter was soon sifted down to the employment of copper compounds; and of various classes of substances so far tested copper compounds still remain as the most generally potent fungicides. In 1882 the value of bordeaux mixture, made by combining lime and blue stone or copper sulphate, was discovered by accident in France, and it proved to be such a generally valuable remedy and stimulated such an array of investigations of plant diseases that we may say the serious study of the subject of plant disease control began about that time—twenty-five or thirty years ago.

Within a few years after the discovery of bordeaux the treatment of plant diseases began to receive attention in this country. Black rot of the grape, that was causing trouble in France, was likewise damaging the crops in the Eastern states, and in 1885 the Federal Department of Agriculture published its first two circulars on fungous diseases. They dealt with the treatment of downy mildew and black rot of grapes. Up to 1890 less than a dozen different plant diseases had received the attention of the Federal

Department of Agriculture. The work had hardly commenced. Within recent years, however, the combined efforts of the various state experiment stations and of the federal department has produced a remarkable array of work, and we may feel assured that no European country has made anything like the showing we have in the practical control of horticultural pests.

To illustrate, the Ohio Experiment Station has recently issued a bulletin called "A Brief Hand Book of the Diseases of Cultivated Plants in Ohio." In it are briefly discussed over four hundred different diseases, practically all of which occur in that state, and nearly all are of fungus origin. The apple claims twenty-four of these, the peach eighteen and the pear ten.

Some of these Eastern troubles will no doubt reach the Pacific Coast in time, but many of them that are of serious consequence there will not cause by any

means the same amount of damage in California. Brown rot, for instance, is capable of destroying seventy-five per cent of the peach crop in Georgia in less than a week if a series of damp, warm days come at about the picking time. Brown rot exists in California, but it will never become a serious pest of stone fruits because the dry summer weather will not allow it to develop. On the other hand, the apple powdery mildew seems to find the environment of the arid West more conducive to its development than are the conditions east of the Rocky Mountains. Other examples might be cited of the relative severity of a given disease in different localities.

Considering some of the fruit diseases of this state, let us review briefly our knowledge of the commoner ones, and their methods of control.

One disease that is common to a large number of fruits is root rot. Peaches, apricots, almonds and apples are frequently destroyed by this malady. Some blocks of apples in this valley have been very seriously attacked. When a tree is once affected it is almost sure to go sooner or later. As mentioned before, the usual type of root rot found in California is caused by a form commonly called the oak tree fungus, or toadstool fungus, and many orchardists recall oak trees standing in the locality where trees have since died out in their orchards. The fungus is one of the toadstool group, and in damp springs large patches of toadstools are frequently seen coming up around the base of a tree that is being rapidly killed. The disease may be quite easily recognized on examining the crown and roots of the tree, for if the root rot is present it can be detected by the white fibrous layer of fungus threads, or mycelium, as it is called, occupying the region of the cambium layer, just between the bark and the wood. Sometimes the outer surface of the roots is flecked here and there with bits of the white mycelium. The inner bark dies



SPRAYING IN ONE OF THE MANY BEAUTIFUL ORCHARDS IN WENATCHEE VALLEY, WASHINGTON



SPRAY MIXING PLANT OF B. F. HURST, BOISE, IDAHO



and turns brown, and the toadstool odor is usually very distinct in this dead bark. The parasite probably gains an entrance by some of the smaller roots or through bruises of the larger ones, and gradually progresses until it has involved the whole root system. The fungus appears to be capable of living in the soil for quite a period of years after the tree has died, and for this reason it is very uncertain business to replant in spaces where trees have died out, at least for several years. Replanted trees sometimes grow for five or six years and then succumb. It is common to see apples, peaches and almonds infected and killed within a year from the time of resetting. It happens that the pear root is resistant to this root rot fungus, hence pears may be used for replanting if desired. When root rot destroys one or two trees in an orchard it is usually noticed that within a few years others near by commence to die out, and the area gradually enlarges. This spreading is brought about by the fungus slowly growing through the soil and continually encroaching on new territory. Undoubtedly, too, the cultivating tools help to carry the decaying roots from the diseased to the healthy parts of the orchard. When a tree is seen to be dying from this cause it should be immediately removed and the roots dug out as much as possible and carried away from the orchard. The practice of removing the tree as soon as it is seen to be infected will help in checking the rapidity of advance upon the healthy trees. It is perhaps a good plan to allow the holes where trees have been removed to stand open, so as to dry out, for this may kill some of the disease material. Putting lime in the holes is of questionable value.

Regarding the peach, there are two common diseases in California, both of which are very easily controlled by spraying. Peach leaf curl has been known for many years in this state. Some varieties, as the Lovell, are par-

ticularly subject to it. The thorough spraying and the dry springs that have occurred for the past three years have done much to reduce the trouble. The remedy is spraying with bordeaux or lime-sulphur solution in the spring as the buds swell.

The other common peach disease is the California peach blight. As previously pointed, its control requires, in the first place, a thorough fall spraying before the hard rains set in, and this can just as well be put on as soon as the foliage is off the trees. Spraying and weather conditions have greatly reduced peach blight within the past few years, but when the trouble was at its height it was demonstrated that bordeaux gave somewhat better results than lime-sulphur solution in its control. At the present time the disease

has been so thoroughly reduced that lime-sulphur will no doubt prove thoroughly efficient for fall work this season if the grower wishes to use that spray.

To make a thorough clean up, a second spraying should be applied in the spring as the buds swell. This is also the time for the peach curl and the peach moth spraying. The University Experiment Station has demonstrated the thorough efficiency of lime-sulphur in controlling peach moth when applied at the time the buds are swelling. All things considered, an effective and very valuable plan to follow would, therefore, be to spray in the fall with bordeaux, and in the spring with lime-sulphur, for the latter has sufficient fungicidal properties to do all that appears to be required of it at that time of the year, and is at the same time an efficient insecticide.

The commonest disease of apricots is what is usually called shothole, or scab. On the fruit it produces the red spots which sometimes seriously depreciate the value of the crop. On the foliage similar red spots develop, and the affected area eventually drops out, leaving a hole, hence the name shothole.

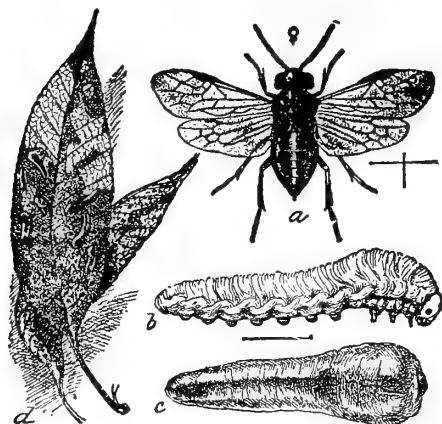
After peach blight came to be properly recognized and understood many growers began to look upon apricot shothole as caused by the same fungus. On the surface that seems improbable, since apricot shothole was known in some districts long before the peach blight made its appearance, and in some sections of the state where peach blight is practically unknown apricot shothole is very prevalent. From a considerable amount of experimental spraying and laboratory work I am inclined to the opinion that the peach blight schedule of spraying is not going to prove successful in the control of apricot shothole. It, appears however, that some good may possibly be done. The problem requires further investigation.



SHOWING ONE OF THE MANY USES TO WHICH THE ENGINE ON THE POWER SPRAYER MAY BE PUT



FILLING THE TANK WITH FILLER PUMP



PEAR TREE SLUG

a, Adult fly; b, Larva or slug, with slimy covering removed; c, Same, in natural condition; d, Leaves showing slugs and their injuries.

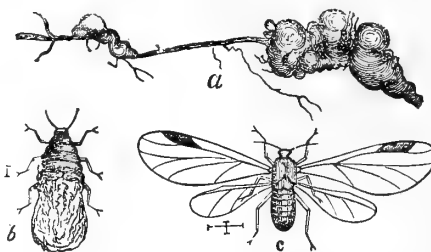
Pears are subject to two serious diseases in this state, the most important being pear blight, which also attacks apples, quinces, loquats and other wild forms of the pome family, as the California holly. The method of treatment has been so widely discussed within the past years that every grower is more or less familiar with it. It should be understood that the various patent remedies for pear blight are fakes. The origination of these patent remedies has kept pace with the invasion of pear blight as it has gradually swept across the United States from East to West, and each new pear blight territory has its promoters of supposed remedies to be put in holes bored in the trunks of trees or poured around the roots. The only solution of the difficulty for the susceptible varieties is to follow the recommendations already given, for the hundred years and more that pear blight has been known in New York state has

given time for a careful investigation of all possible remedies.

Pear scab, in most sections, is controlled by two sprayings with bordeaux at the time the cluster buds are opening, and another after the fruit sets, as recommended in one of the state experiment station bulletins. There are localities and seasons in which later sprayings will no doubt be required.

The cherry has its troubles in the way of sunburn and die-back. Sunburn sometimes does considerable damage on young trees, and can undoubtedly be prevented to a large extent by thorough whitewashing of the trunks and lower parts of the framework limbs. Many opinions could be offered concerning the die-back, but definite information is still lacking.

Finally, we may consider the apple. Pear blight affects it seriously in some sections, and the treatment is along the same line as that applied to pears. Apple scab is not as common in California as one might expect from the climatic conditions of some of the apple sections, and



WOOLLY APHIS, ROOT FORM

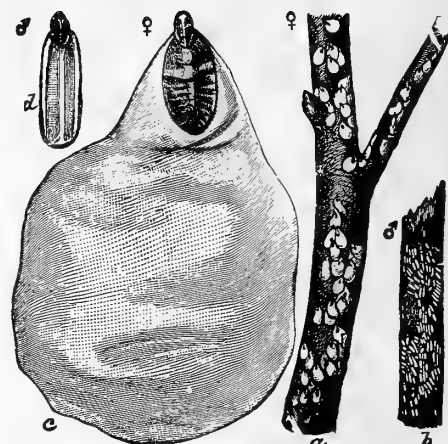
a, Small root showing swellings caused by the lice; b, Wingless louse, showing woolly secretion; c, Winged louse. (After Saunders.)

its control is relatively easy. Spraying with bordeaux or lime-sulphur at the time the leaf buds are opening, and, possibly, one or two later applications of bordeaux, depending on the weather conditions, will control this trouble. In this locality, as well as other coast sections, bordeaux should be used with caution, for the fogs and humidity are apt to cause bordeaux injury to the fruit as well as the foliage.

The malady known in this section as "sappy bark disease" is still an unsettled problem, both as to its cause and means of control.

At present the most serious pest with which the apple growers of Pajaro Valley have to contend is the apple powdery mildew. It is relatively quite common throughout the state—in fact throughout the arid West—but does most damage along the coast.

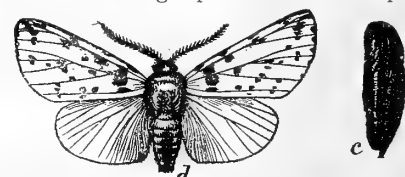
It usually occurs on the lower side of the leaf and has a white powdery appearance, as the name would indicate. Even a small infection is sufficient to stunt the growth and cause a crinkling of that particular portion of the leaf, and when several infections become established at once on a young growing leaf the result is an almost immediate checking of growth and the stunted leaf becomes very much crinkled. The current year's twigs are also very susceptible to infection, becoming entirely covered with the white powdery growth. As a terminal bud is expanding the emerging leaves may become infected on



SCURVY BARK LOUSE

a, Twig showing scales of female louse; b, Twig showing scales of male louse; c, Scale of female, greatly enlarged; d, Scale of male, greatly enlarged.

both the upper and lower surfaces as rapidly as they appear, and in the end the bud itself may be killed, leaving only a rosette of tiny leaves, which soon dry up. In that case the terminal growth of the tree is practically nil. The white powdery substance characterizing the mildew consists of myriads of spores, which are easily blown about the orchard, and during the foggy nights they germinate and start new infections. The lower surface of the leaf is more susceptible to infection than the upper, hence it is usually on the lower side that the mildew occurs. Obviously with this stunted foliage the tree is not capable of producing nourishment for all the growth to which it is entitled; and no doubt, too, the effect is frequently felt on the setting of next year's fruit buds. It appears that the mildew has a toxic or poisonous effect upon the tree, which seems to make it more susceptible to further infection as well as stunting the growth. The white powdery spores appearing during the summer are relatively short-lived. The natural provision which the fungus has for bridging over from one season to another is by means of more resistant resting spores than are pro-



FALL WEB WORM

a and b, Caterpillars; c, Chrysalis; d, Moth.

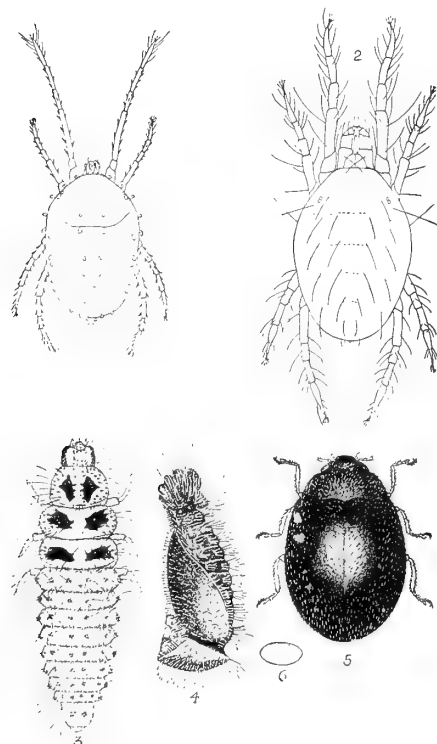
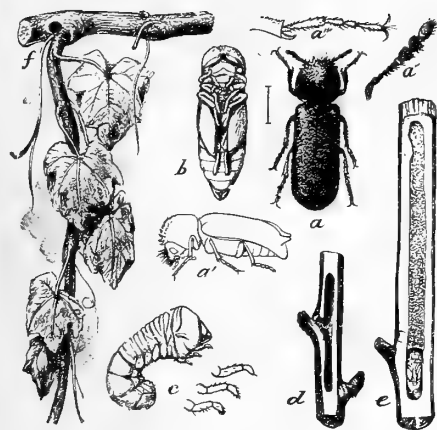


FIGURE 1, Brown mite; 2, Red spider; 3, 4, 5 and 6, Larva, pupa, adult and egg of *Scymnus punctum*. Figure 1 enlarged 66 times; 2, 133 times; 3, 4, 5 and 6, 30 times. Original, Miss M. A. Palmer, delineator. Colorado Experiment Station.



APPLE TWIG BORER

a, Beetle, dorsal view; a', Side view; b, Pupa, from beneath; c, Grub, side view; d, Apple twig showing burrow; e, Burrow in tamerisk with pupa at bottom; f, Stem of grape, showing burrow. All enlarged except stems showing burrows.

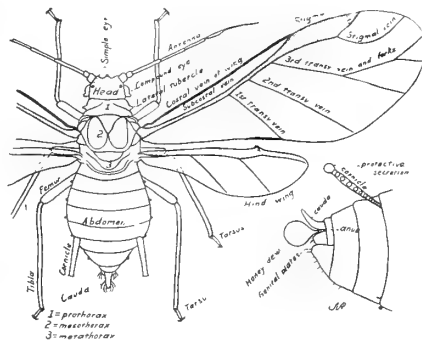
duced from the middle of summer on. These spores are capable of withstanding freezing and drying, but they are evidently of very little importance in starting the following year's infections in this locality, for the fungus very frequently infests a twig so thoroughly that it gets into the buds, and in the dormant buds it winters over in the mycelial form, and is there ready to expand and keep pace with the growth of the new leaves as they develop the following spring. This wintering-over of the fungus in the buds is a rare and peculiar habit for the members of the mildew group of fungi. It is made possible no doubt by the mild winters, and is responsible for starting practically all the infections in the spring.

The disease appears to have existed here for the past fifteen or twenty years, and for a number of years now has been attracting the attention of the growers. It early developed that the methods ordinarily recommended for apple mildew control are ineffectual in this section. About four years ago Mr. C. H. Rodgers took steps to interest the United States Department of Agriculture in investigating the problem. It was impossible to take the work up until a year ago last spring, and in the meantime Mr. Volck was at work, and obtained some very valuable results. During the pres-

ent season Mr. Volck and the federal department have been co-operating, and a considerable amount of data has been gathered, which is to be published this year as a bulletin of the United States Department of Agriculture.

The various fungicides commonly in use for controlling plant diseases may be placed under two headings—the copper sprays and the sulphur sprays. The copper sprays include bordeaux as ordinarily prepared, and, in addition, various modified bordeaux, copper acetate, copper chloride, copper carbonate, etc.; and the sulphur sprays have until recently consisted of either ordinary ground sulphur or one of the soluble sulphides, as potassium sulphide or sodium sulphide, or the common lime-sulphur solution.

In the investigation of the mildew problem practically all the spray materials known have been tried, and a large number of other substances that sug-

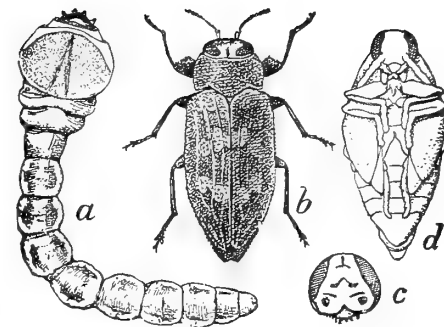
EXTERNAL STRUCTURE OF AN APHIS  
Colorado Experiment Station

gested themselves as having some possible value have been prepared and fairly tested.

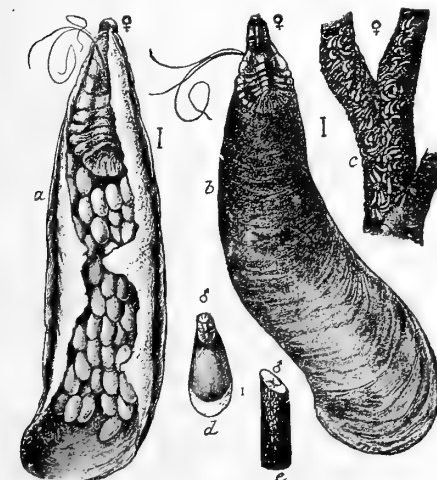
Just at this point it is great pleasure to mention the very kindly interest that Mr. Rodgers has continually taken in this work and the valuable assistance he has rendered by giving us unreserved access to his entire orchard, for when experimental spraying is to be carried on there is always a danger of causing serious injury to the trees as well as spoiling the crop, and in the present instance we have accidentally overstepped that danger line more than once.

Regarding the value of copper sprays, bordeaux is almost useless for apple mildew control in this section, and only one or two of the other copper compounds tried have offered any hope at all.

As has been mentioned before, sulphur is the commonest remedy for the mildew group of plant diseases, and at present it is the best remedy we have to offer for the apple powdery mildew. In fact so far as the mildew is concerned it can be entirely satisfactorily controlled by certain sulphur sprays, but other difficulties enter which tend to counteract the good qualities of these sprays. To digress a bit, the longer one is engaged in experimental spraying in this section the more he becomes convinced of the sensitiveness of the trees and the ease with which injury may be brought about. This sensitiveness is undoubtedly the result of the climatic conditions. In fighting fungous diseases by spraying the spray material must have sufficient poisonous properties to render it capable of

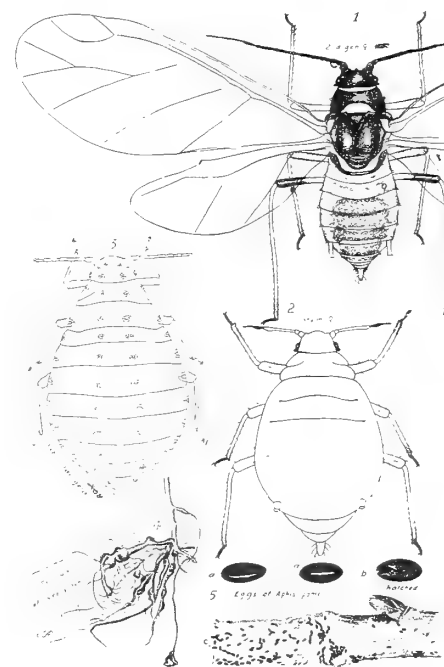
FLAT-HEADED APPLE TREE BORER  
a, Flat-headed larvæ; b, Mature beetle; c, Head of mature beetle; d, Pupa. All twice natural size.

killing the fungus, but must not be sufficiently toxic to injure the crop plant. The fungicide must, therefore, be so selected as to fit into the interval between the killing point for the fungus and the point where injury begins to appear on the host plant. For this valley that interval, or leeway, is very narrow, hence the difficulties that have arisen in the present problem. For instance, certain strengths of commercial lime-sulphur solution and of other soluble sulphide solutions that are now quite commonly used in other parts of the United States, with little or no danger of injury to the apple foliage, are entirely out of the question here. Fog no doubt plays a large part in explaining the injury to apple foliage that may result in this valley from the use of spray materials that appear to be harmless in other parts of the United States. The explanation is evidently as follows: Water, and especially atmospheric moisture, is capable of dissolving small quantities of most any substance that may be applied as a spray; indeed this solvent action is necessary to accomplish the



OYSTER SHELL BARK LOUSE

a, Female scale, from below, showing eggs, greatly enlarged; b, Same, from above; c, Female scale on twig, natural size; d, Male scale, enlarged.

FIGURE 1, Winged viviparous female of aphid bakeri; 2, Stem mother of aphid bakeri; 3, Wingless viviparous female of *Schizoneura lanigera*, showing wax glands; 4, Root galls of woolly aphid of the apple; 5, Eggs of the green apple aphid (*aphis pomi*): a, Eggs much enlarged; b, Eggshell after the louse has hatched; c, Apple twig with eggs upon it. Figures 1, 2 and 3 are enlarged 30 diameters; Figures 5 a and b enlarged 20 diameters; c, enlarged 2 diameters. Colorado Experiment Station.

beneficial results of such a fungicide as bordeaux. Foggy conditions, however, produced decidedly different results from rain. The deleterious substances dissolved in rain water are largely washed off the foliage by the rain itself, whereas dew usually merely wets the foliage and then dries up. There is very little of the washing process. Thus each time dew collects upon the foliage a small amount of spray material is apt to dissolve, if it is at all soluble in atmospheric moisture, and with the alternate wetting and drying of the foliage, and no actual washing off, extremely minute quantities of a toxic substance may eventually accumulate in sufficient amounts in the leaf to cause injury. This is no doubt the explanation of the extreme sensitiveness of apple foliage in this section to spray materials in general, and is probably the explanation of certain difficulties that have been met with in the apple mildew investigation.

The solution of the mildew problem in Pajaro Valley may be of more than local value, for new and non-injurious fungicides are much needed east of the Rocky Mountains, and it is hoped that the exacting conditions of this section will lead to the development of something useful in those localities where similar, but not so severe, climatic conditions prevail at times.

Since the soluble sulphides are out of the question, if sulphur is to be used at all it must be in an insoluble form, and at present the matter is sifted down to the use of sulphur itself. But while



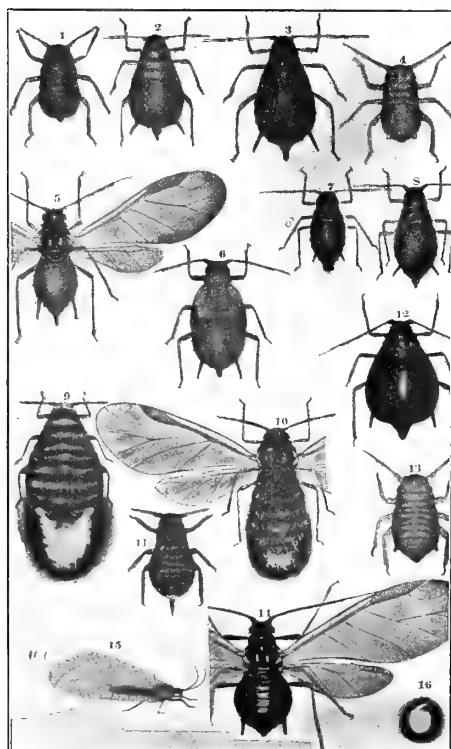
ENTRY NO. 4—THE CUSHMAN POWER SPRAYER, WHICH WON THE GOLD MEDAL IN THE POWER SPRAYER CLASS, AT HORTICULTURAL CONGRESS, COUNCIL BLUFFS, 1910

ground sulphur is effective against the mildews of other plants and in other localities, the finest grades obtainable are of practically no use here. In the work previously done by Mr. Volck it was found that when lime-sulphur solution is added to a solution of copperas, or iron sulphate, a flocculent, black, muddy mass precipitates, which is effective in controlling mildew. This discovery has been followed out by an extensive series of experiments during the past two seasons, and it appears that the virtue of that material lies principally in the large amount of precipitated sulphur which it contains in addition to the black iron sulphide. This sulphur is of the same nature as the finely ground article used for grape mildew, but is far finer than anything that can be produced by grinding. In addition, a number of other sprays have been prepared containing sulphur in an extremely finely divided form, and all have possessed the virtue of mildew control, and also have the very desirable property of stimulating the growth of the tree.

To somewhat counteract these good qualities we have two bad features that accompany sulphur sprays. First (and again probably due largely to the sensitiveness of the trees in this valley), if the spray is too heavily applied it is apt to cause a dropping of the fruit and, to some extent, the foliage. Second, the fruit having a deposit of spray material on its exposed side is more susceptible to sunburning when a period of hot days comes. The foliage dropping that accompanies the use of these sprays is of no serious consequence, since the growth stimulated more than makes up for the loss, and it is hoped that a method of entirely eliminating the damage to the fruit will be eventually worked out. During the past season a considerable amount of commercial spraying with this so-called iron sulphide spray was done in this valley, and the results are encour-

aging. The method of preparing the spray and the times for application will be discussed in the bulletin to be issued later.

The problem is not yet finished, but it is hoped in the end to have a satisfactory method for the control of mildew worked out.



PLANT LICE

Green Apple Aphid: 1, Young stem mother; 2, Adult stem mother; 3, Adult apterous viviparous female, second generation; 4, Young female, second generation; 5, Winged viviparous female of third generation; 6, Pupa of preceding; 7 and 8, Apterous male and female. Woolly Apple Aphid: 9, Apterous viviparous female; 10, Fall migrant; 11, Overwinter young. Black Peach Aphid: 12, Adult apterous viviparous female; 13, Young female, first instar; 14, Alate female; 15, Chrysopa sp. and eggs; 16, Cocoon of preceding.

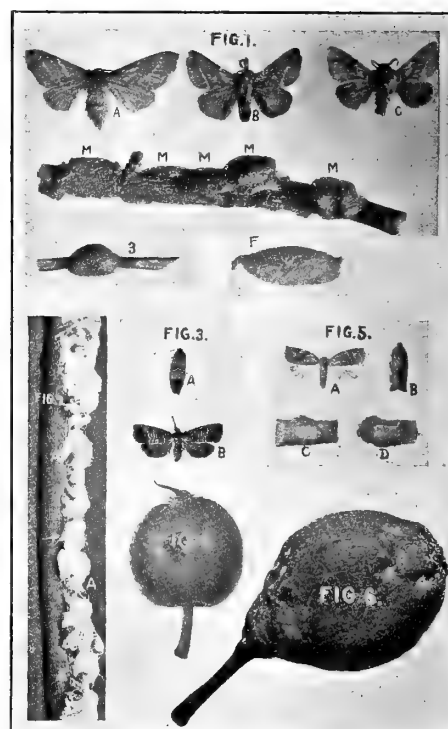


FIGURE 1—Western Tent Caterpillar: *a*, Female moth; *b*, *c*, Males; *mm*, Apple twig with egg masses; *f*, Cocoon; 3, Egg masses of American tent caterpillar, life size. FIGURE 2—Cottony Maple Scale: *a*, Scales mostly hidden by secretion, life size. FIGURE 3—Codling Moth: *a*, Wings closed; *b*, Open; enlarged about one-fourth. FIGURE 4—Apple showing white egg of codling moth (under letter *f*), life size. FIGURE 5—Fruit Tree Leaf Roller: *a*, Moth, wings open; *b*, Closed; *c*, *d*, Egg patches, hatched; all life size. FIGURE 6—Pear with Howard's Scale: The young appear as minute white specks; life size. Figures from photographs by the author. Photographs by C. P. Gillette, Fort Collins, Colorado.



# INJURY CAUSED BY THE APPLE POWDERY MILDEW

BY W. H. VOLCK, WATSONVILLE, CALIFORNIA

**T**HE injury caused by this fungus disease is at first not very serious, only a few twigs on the tree may be attacked, and then only partly covered by the growth of the parasite. Under these conditions the tree remains strong and vigorous with undiminished productive power. Such is the condition for perhaps the first three years of the infection, but a careful observer will notice a gradual increase in the number of twigs infected from year to year. The number of leaves partly dwarfed by the growth of the fungus on the under surface also increases. This gradual increase in the amount of the infection appears at first to be due entirely to the greater amount of wintering over fungus, but there comes a time when the tree is weakened by the disease, and the parasite then flourishes more abundantly as a result of reduced resisting power of its host.

Trees which have become thoroughly infected with the mildew are characterized by the very small amount of wood growth produced during a season, and the continuation of such a condition results in dwarfing. Some of the younger orchards in the badly infected areas have been so much dwarfed as to practically stand still, a condition which will result in total loss if not remedied. Those trees which had reached the full bearing size before the advent of the mildew have not been so much affected, but nevertheless retarded and injured to an appreciable extent.

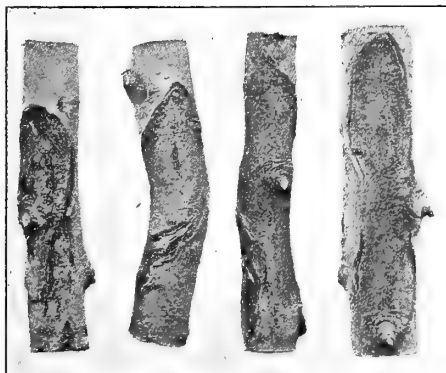
The reduction in wood growth is also accompanied by even greater injury to the foliage. Mildew-attacked trees show a dwarfed and crinkled condition which is quite characteristic, and must, even

riorated in orchards now badly infected with the mildew, but such deterioration has also been noted where the mildew could hardly be regarded as being serious enough to cause the effect.

In the setting of the fruit the weakening of the buds caused by the mildew of the past season may reasonably be assumed to have a material influence. The fungus also frequently starts out during the blooming period, often infesting the stems of the young fruit. Such infection may cause failure to set. After setting has been assured the presence of mildew on the trees must still affect the fruit by reducing the assimilating or feeding power of the tree. Reduction in assimilating power may in itself be sufficient to explain the entire effect of the mildew, but it is quite probable that the trees are also poisoned by substances excreted by fungus. Mildewed orchards are not necessarily failures from the crop producing standpoint, but the condition seems to be one of gradually diminishing quality, which, in time, means unproductiveness.

The following account is not intended to be a technical description, but one that will enable the reader to recognize the disease and understand its methods of propagation.

Mildews are in general fungus parasites that grow over the surface of the host plant, but do not penetrate the tissue to a very great extent. Such penetration as does take place consists in a



APPLE TREE ANTHRACNOSE

more than the reduction of the wood growth, contribute to the decline in vigor of the tree. Such a condition is doubtless responsible for a vast reduction in foliage area, greatly affects the assimilating power of the tree, and we are therefore led to the conclusion that the quantity and quality of the fruit must suffer to a marked degree. Just what the effect on the fruit has been is not fully determined. It is a matter of record that size, quality and yield have dete-



NEWTOWN FOLIAGE, UNSPRAYED



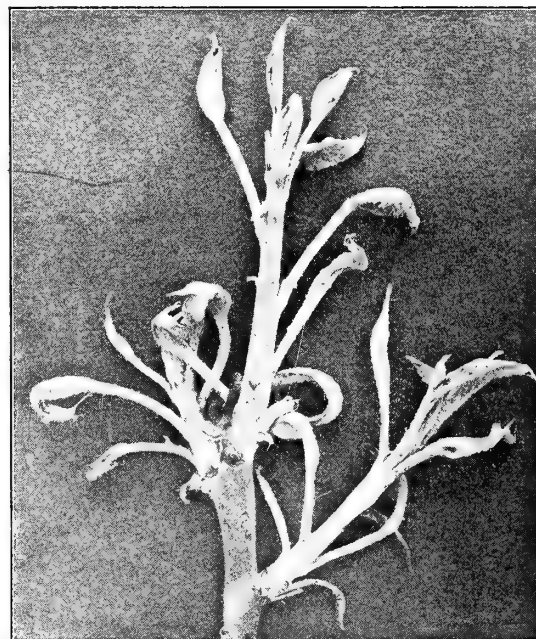
NEWTOWN FOLIAGE SPRAYED WITH IRON SULPHIDE



COMPLETE COVERING WITH THE MILDEW

Bud that was infected after making a healthy start in the spring

completely covers the surface of young shoots, and gives them a decidedly mouldy appearance. Frequently there is an abundance of a white or greyish powder which can be very readily removed from the mildewed surfaces. This powder consists in great numbers of the summer spores of the fungus. At other times there are fewer spores, and the fungus has the appearance of a felt-like covering closely applied to the twig. When the twig is completely covered by the mildew the leaves have a somewhat wilted appearance, remain small and are short-lived. In this condition the

COMPLETE COVERING WITH THE MILDEW  
Buds that were infected before expanding

few short feeders that draw substance from the plant.

The apple powdery mildew is no exception to this general rule. The parasite grows over the surface of the affected portions of the host, and so far as the observations of the writer go it has a very limited internal system. The external growth of the fungus is, however, very profuse, and affords a very ready means of recognition. This mildew often

mouldy growth is abundant on both the stem and leaves. When such infested shoots are compressed in the hands they emit a very strong mouldy odor. When the mildew completely covers the shoots it has a depressing effect on the growth. Frequently the distance between leaves on the stem is very much reduced, and the growth of a whole season may be compressed to less than a half inch. In such cases the stem is usually thickened.

If, however, the attacked shoot happens to be very succulent, such as a watersprout, the growth may be more normal as to length, but will be spindling, and the lower leaves die off, leaving only a few of the younger ones at the tip. All graduations are found between these extreme types.

The mildew does not confine its attacks to the completely infested twigs, but small infections occur on the under side

BELLFLOWER FOLIAGE SPRAYED WITH IRON SULPHIDE  
THROUGH THE SPRING AND SUMMERBELLFLOWER FOLIAGE UNSPRAYED. CRINKLED AND STUNTED  
APPEARANCE DUE TO MILDEW ON UNDER SIDE OF LEAVES



WHITE WINTER PEARMAIN FOLIAGE UNSPRAYED



WHITE WINTER PEARMAIN FOLIAGE SPRAYED WITH IRON SULPHIDE

of the leaves of otherwise healthy stems. Often every leaf on the tree bears these small colonies of the parasite. The effect on the leaves is a dwarfing, and often killing, of the portion covered by the fungus. This produces a curled or distorted leaf that does not attain full size.

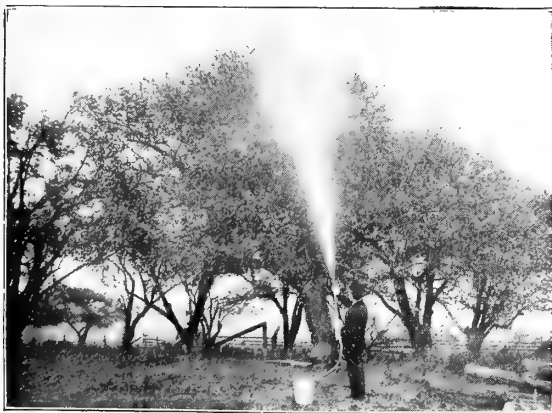
This mildew, as has already been stated, is a fungus parasite, and the individual strands of the fungus are easily seen under the microscope. These strands are invisible to the unaided eye, but in the aggregate form the white to greyish covering before described. The individual strands of the fungus very often mat together closely and form a tough felt-like coating, sometimes one-sixteenth of an inch thick, on the infected stems.

During the spring, summer, and even late into fall, the fungus produces great numbers of spores, which appear in the aggregate as a white to grayish powder, covering the affected parts. This powder is so often present as to have given the fungus the name of powdery mildew. The summer spores are produced in countless numbers and afford the chief means of distribution of the fungus. The spores are scattered chiefly by the wind, and whenever they fall on the young growth of the apple they are capable of germinating and reproducing the disease. The stems

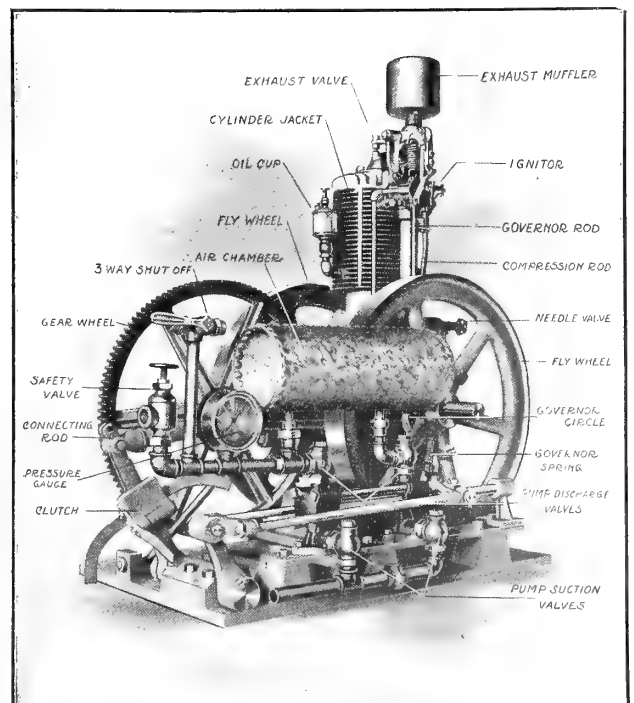
and foliage of the apple tree are quite immune from infection after they are three weeks or a month old, so the new colonies of the disease are found almost exclusively on very young leaves. When a colony starts at the terminal bud of a growing shoot the resulting growth is usually completely covered by the mildew. The infections which spring up on the somewhat more mature leaves are usually confined to the under surface,

but even these may at times reach the stems and cover the new growth as completely as the terminal bud colonies.

The summer spores of the fungus are a very efficient means of distribution, and account well enough for the infections



The Standard is quite different from any other spray pump, being arranged so that it can be used either with a bucket or knapsack, or with a barrel or tank. It is useful for any sized orchard up to a thousand trees. The Standard Stamping Company, of Marysville, Ohio, will gladly send full information upon request.



GASOLINE POWER SPRAYER

Powerful, dependable, compact, and light in weight. Perfectly self-contained and operates at 200 pounds pressure. Non-heating engine, 2½ or 3½ horsepower, neither fan nor water cooled. Manufactured by E. C. Brown Company, Rochester, New York



that take place during the growing season. Wintering over, however, is accomplished in other ways, as these summer spores are short-lived.

In wintering over this fungus has two well defined methods. The first is very similar to that of the tree, that is, the parasite remains dormant upon the twigs where it was growing during the summer. The mildewed twigs are seldom killed, but often form terminal and lateral buds capable of growth. These buds expand in the spring along with the other foliage of the tree, and are usually infected with the mildew which covers them and almost immediately produces a crop of summer spores, which then scatter the infection. In the majority of cases mildewed twigs produce an infected growth the following spring, but occasionally the new shoots are healthy, and remain so during the season.

The hibernation of the mildew on the infected twigs is the principal means of wintering over, but the fungus is provided with another method which may account for some of the early spring infections. In August, September and October dark brown patches frequently appear upon the greyish white fungus

coating of infected stems. Examination under a microscope shows these patches to consist of large numbers of curiously marked and spined, spherical bodies. These bodies, known technically as perithecia, each contain eight winter spores of the fungus. Protected under the thick coating of the perithecia, these winter spores are capable of enduring considerable exposure, and under favorable conditions will germinate in the spring.

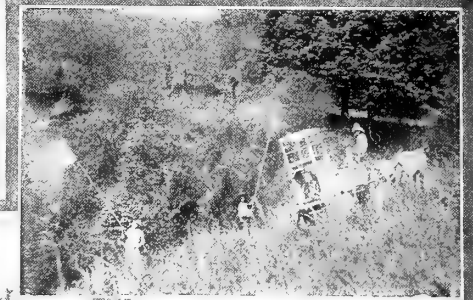
Of the two methods of wintering over, the one first described is apparently of most importance to the fungus under

the climatic conditions of California, but in either case the process depends upon the mildewed twigs of the last season. During the winter these mildewed twigs are often very conspicuous, especially when the sunlight strikes them at the proper angle. Under proper conditions of illumination the whitened tips may be visible for several hundred feet.

Mildews, like other fungus diseases, are dependent upon certain conditions of heat and moisture for their development, but in general are less affected by seasonal variations in rainfall than most other classes of parasitic fungi. The powdery mildew of the apple seems especially resistant to adverse weather conditions, and succeeds in establishing a very strong infection during seasons when the apple scab has been practically exterminated. This is due probably to the fact that the mildew is very hardy when once established, and succeeds in growing in quite dry air. Also, the summer spores are produced so constantly and in such large numbers that they are always present and able to take advantage of any favorable conditions for germination that may arise. It has been our experience that



Winter spraying for San Jose scale in the 300-acre orchards of C. M. Miller, Illinois

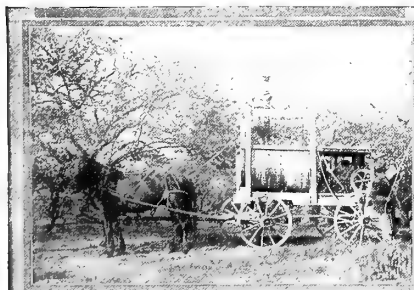


Spraying on a steep hillside in Southern Ohio

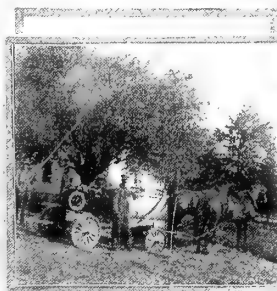


Spraying in the orchard of E. R. Pooley, at Hood River, Oregon

Southern Delaware orchard, showing new type sprayer in foreground and an old-timer in rear, though still being used



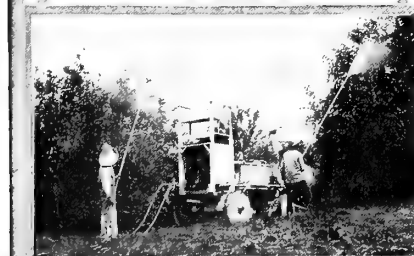
Spraying in the bearing orchard of William Vandever, Benton Harbor, Michigan



Orchard of H. D. Stowell Ludington, Michigan



Power sprayers in 40-acre orchard of L. F. Sutherland, Benton Harbor, Michigan



Spraying in the orchard of Cox Brothers, near Proctorville, Ohio



Getting ready to spray in orchard of W. W. Farnsworth, Ohio

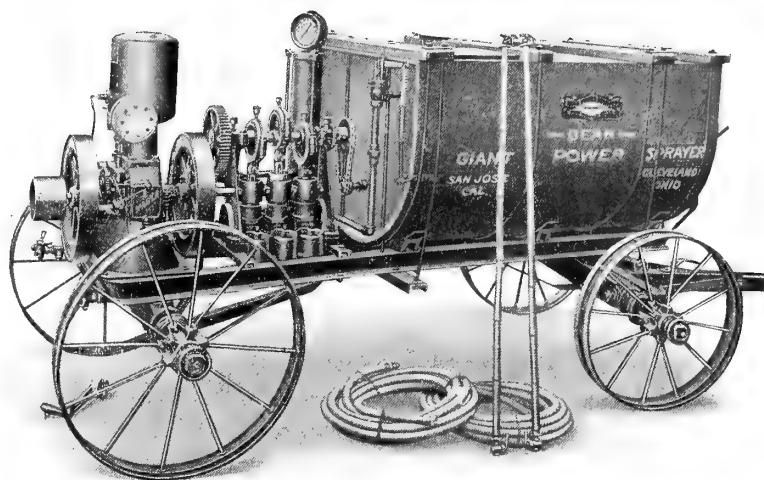


the apple powdery mildew may safely be counted upon to be present on the trees in injurious amounts every year when once well established. In other words, weather conditions are seldom sufficiently unfavorable to the growth of the fungus to amount to satisfactory control.

So far as local experience goes, no variety of apple is immune to the mildew, but some are more injured by its attacks than others. Those varieties of delicate growth under the environment in question are more susceptible than the hardy ones. It may very frequently develop that a variety suffering little in one locality may be badly attacked in another. In the Pajaro Valley, a list of varieties, including the Newtown Pippin, Smiths Cider, Missouri Pippin, Spitzenberg, Gravenstein and Yellow Bellflower, have in general been found to be especially susceptible. Under similar conditions the Red Pearmain, White Winter Pearmain, Red Astracan, Rhode Island Greening and Langford are less badly attacked. However, these varieties cannot be rigidly placed in the above classification, for even in the limited area of the valley notable exceptions occur. Further back from the coast, and in the Santa Cruz Mountains, Newtown and Bellflowers are quite free from the disease, but Spitzenbergs and Jonathans are badly attacked.

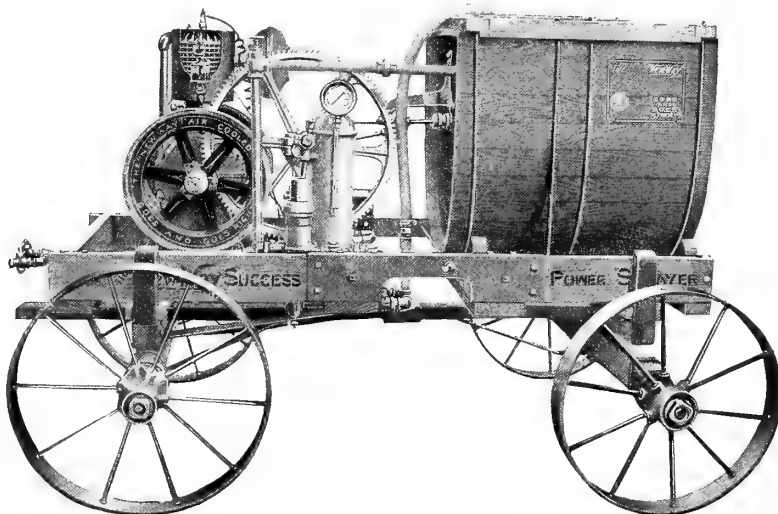
Mildew infection and total absence from it makes a marked difference in the general appearance of the tree, and it often happens that an apple growing under mildew conditions will hardly be recognized as the same variety when found in a section free from the disease.

Little or no effort had been made to control apple powdery mildew in the

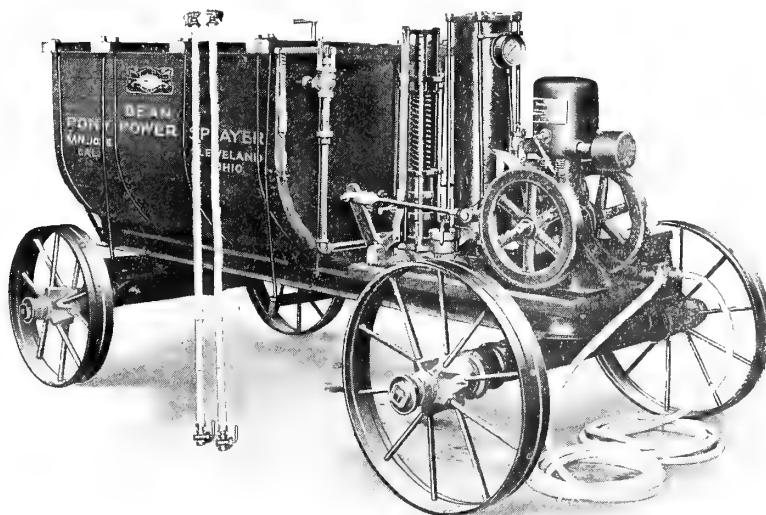


BEAN GIANT NO. 124

One of Bean's latest models, capable of giving high pressure and large capacity  
Total weight, including trucks, 1,700 pounds  
Manufactured by Bean Spray Company, San Jose, California

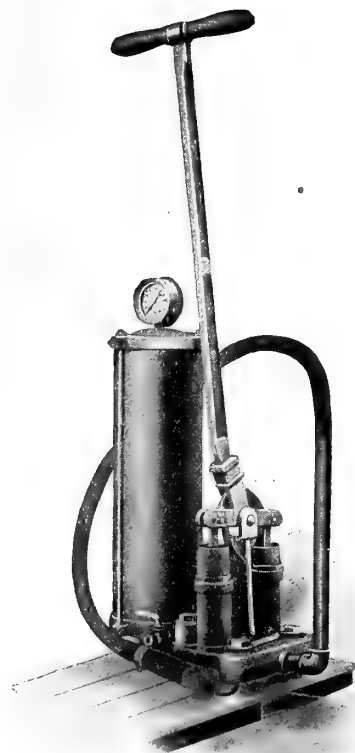


The "Success" is a very light weight, high pressure sprayer, built especially for the average sized orchard. Equipment includes 125-gallon tank and 2½-horsepower "New Way" air-cooled engine, twin cylinder, outside packed, direct geared pump. This outfit is absolutely guaranteed to maintain a continuous high pressure of 200 pounds year after year without injuring the machinery. Manufactured by the Newway Motor Company, Lansing, Michigan

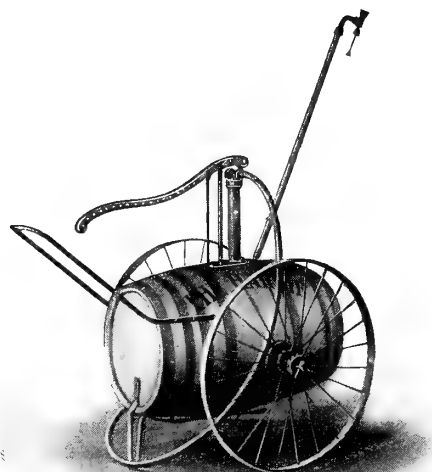


BEAN PONY NO. 140

Weighs only 1,200 pounds, including trucks, and maintains 200 pounds pressure for two nozzles. Manufactured by Bean Spray Company, San Jose, California



TWIN CYLINDER PNEUMATIC HAND PUMP



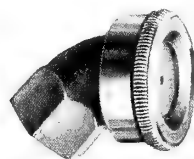
THE HARDIE WHEEL OUTFIT  
Manufactured by The Hardie Manufacturing Company  
Portland, Oregon, and Hudson, Michigan

Pajaro Valley previous to the year 1903. At this date the Codling Moth Investigation was undertaken by the Experiment Station of the State University, and, naturally, the growers called attention to other complaints of the apple, including mildew.

The use of bordeaux mixture was at once suggested because this fungicide had already proved to be of such general application and reliability. Following this suggestion numerous applications of bordeaux were made, and both especially directed against the mildew and in conjunction with apple scab control work. The results of these bordeaux applications have been carefully noted for several years, and it may be quite definitely stated that this fungicide does not offer a satisfactory means of control. Even when three or four applications are made during the spring and early summer the mildew still persists, and the general appearance of the trees is not greatly improved.

Bordeaux applications scorch the mildew covered growths where the spraying has been thorough enough to insure good contact with the fungicide. In this

way considerable of the fungus is killed and spore production retarded. The bordeaux mixture also doubtless kills out young colonies which are covered by the application. This fungicide, however, appears to be of too local and transitory action to give really good results with the mildew. It also has a retarding effect upon the tree growth where used frequently. We do not wish to imply that the use of bordeaux to control the apple scab need be in any way injurious to the trees. This latter effect may be advantageous to the mildew. In our experiments we have found that any remedy to be really effective against the mildew must be neutral to the foliage growth. Indeed, growth stimulation is something to be sought in mildew control.



SIMPLEX ANGLE  
NOZZLE  
Light and durable  
Adapted to high  
pressure  
Made by The Deming  
Company, Salem, Ohio

principal methods suggest themselves, and may be termed curative and preventative treatments, and curative treatments include all means of destroying the parasite after it has established itself. The preventative treatments, on the other hand, include all means by which the tree may be stimulated and caused to produce a healthy growth. also the cure of very early infections, preventing development of the disease.

In the effort to kill the growing and dormant mildew parasite the following substances and methods have been tried:

This list of substances was applied as a spray during the winter in an effort to kill the fungus on the mildewed twigs: Copper sulphate (bluestone), bordeaux mixture, sulphuric acid, iron sulphate and sulphuric acid,

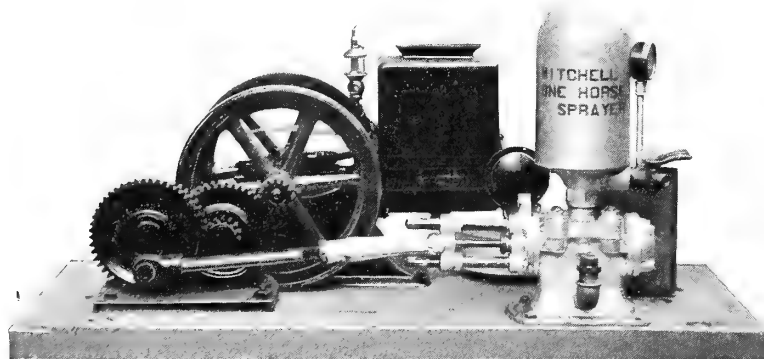
lime-sulphur solution, lime-sulphur and salt, lye-sulphur solution, potash and soda lye sulphides and excess lye, lime-sulphur solution and copper sulphate (that is, copper sulphate and lime-sulphur solution), pruning off infected twigs.

Treatment during the growing season, both curative and preventative: Applications made in a liquid spray with water or as a dust, bordeaux mixture, copper sulphate (bluestone), ammoniacal copper carbonate, copper acetate, copper carbonate, copper benzoate, copper hydroxide, copper sulphide, copper metallic (finely divided), copper sulphide plus sulphur, iron sulphide, iron sulphide plus sulphur, sulphur (precipitated, powdered commercial, powdered in sand, very fine, powdered with lime, sublimed commercial), sulphuric acid, lime-sulphur solution, lime-sulphur solution plus barium carbonate, potassium sulphide, benzoates (sodium, ammonium, potassium), salicylates (same as benzoates), picric acid, phenol (carbolic acid), potassium permanganate, zinc oxide, zinc arsenite, kudzue mixture, arsenate of lead, pruning.

The list of substances mentioned under winter treatment were all applied to at



Herewith is illustrated only one of the very popular models manufactured by the "Friend" Manufacturing Company, Gasport, New York, manufacturers of the celebrated "Friend" hand and power sprayers. These people are located in the famous Niagara fruit belt, where spraying is up-to-date. They are pioneers in the power sprayer line, having built the first combined engine and pump for spraying. Their keen interest in the operation of their machines accounts for their success. More than 100 of their power outfits are working in the Far West, and fruit growers are safe in putting their confidence in the "Friend." See their ad. in this issue.



A NEW SPRAYER FOR 1911, MADE UP HERE BY MITCHELL, LEWIS & STAVER COMPANY

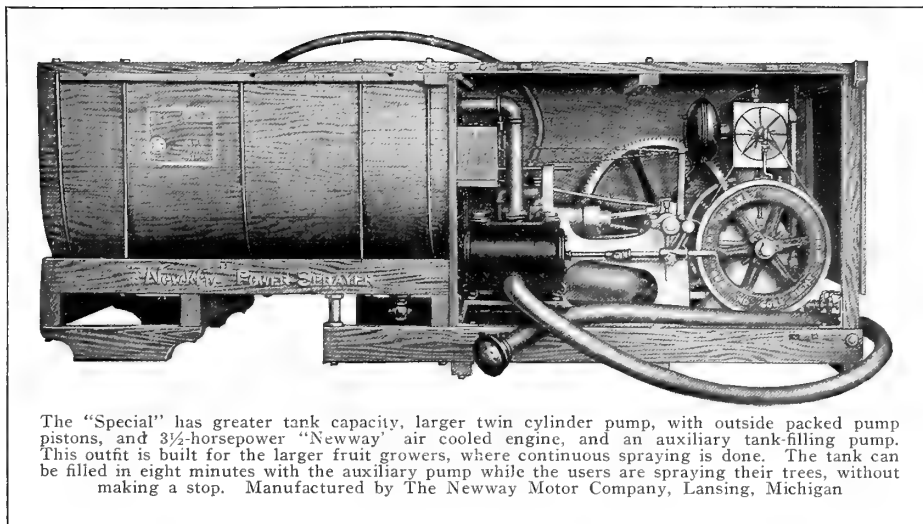
The Mitchell Jr., shown above is a new and from all appearances a sprayer that will prove popular among Northwestern growers. It is made up at Portland by Mitchell, Lewis & Staver Company. The outfit consists of a one-horsepower hopper cooled Stover gasoline engine. These engines have the reputation of being the most simple and easily operated engines on the market and for that reason are adapted for spraying duty. The pump is a No. 313 Myers double-acting pitman power pump, which has a five-inch stroke and is equipped for two leads of hose, with a shut-off at the pump for each lead. The base is substantial and is strongly bolted together. This is just the sprayer for the owners of medium sized orchards. It is light and easily moved from place to place.



"FARMER'S FRIEND" ORCHARD SPRAYER  
Has 50-gallon barrel mounted upon stout truck  
with Deming "Century" barrel sprayer  
Made by The Deming Company, Salem, Ohio

least one tree, and most of them to a number of large trees. The applications made during the growing period were in some cases only applied in small amounts with the atomizer. Such small applications are, however, sufficient to indicate whether larger experiments will be worth while.

Bluestone solution may be used upon dormant trees with very little danger to the plant. This solution has strong fungicidal properties, and may even kill the winter spores of certain fungi. It would seem, then, that a strong application of copper sulphate might kill the dormant fungus plant wintering over on the mildewed stems. Such applications were made during two successive years. The experiments were begun by C. H. Rodgers, and continued by the writer. In each instance the applications were made to a number of large trees of the Newtown Pippin variety, and in one case was as strong as twenty pounds of cop-



The "Special" has greater tank capacity, larger twin cylinder pump, with outside packed pump pistons, and  $3\frac{1}{2}$ -horsepower "Newway" air cooled engine, and an auxiliary tank-filling pump. This outfit is built for the larger fruit growers, where continuous spraying is done. The tank can be filled in eight minutes with the auxiliary pump while the users are spraying their trees, without making a stop. Manufactured by The Newway Motor Company, Lansing, Michigan

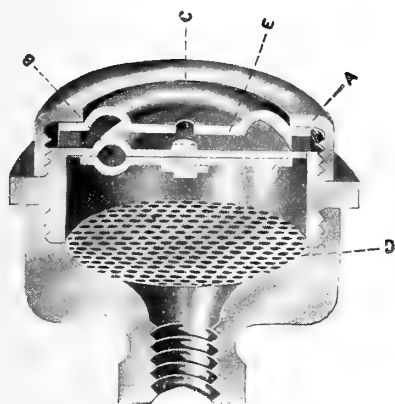
mildew developing from the old infections was apparently the same as upon the unsprayed trees.

The copper sulphate experiments during the dormant period were in most cases paralleled by 6-4-50 bordeaux applications, giving results similar to those obtained with the bluestone solution. These negative results with bordeaux mixture were only to be expected when those obtained with the copper sulphate solution are considered.

Sulphuric acid, applied to seven-year-old Newtown (small for age); date, December 11, 1907; weather fair, temperature moderate; formula, ten per cent commercial sulphuric acid in water, applied with thoroughness to insure complete wetting of mildewed twigs. This application killed back all the twigs and the great majority of the fruit and leaf buds. The killed portions included all the mildewed twigs, so such buds as developed were free from mildew. The tree made a strong growth with vigorous dark green leaves, and none of the

shoots became covered with mildew. Numerous infections of mildew appeared upon the under sides of the leaves, especially late in the summer.

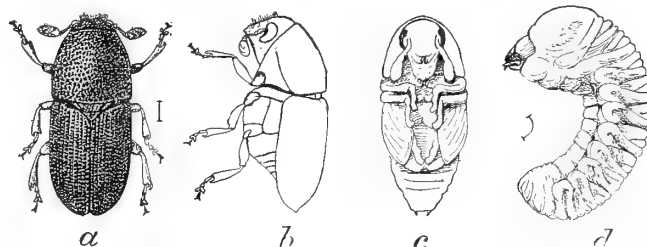
Sulphuric acid and iron sulphate: Date and conditions of the experiment the same as those for sulphuric acid; for-



**NON-CLOG ATOMIC NOZZLE**  
Adjustable to throw every kind of spray. Cannot clog. Perfectly adapted for spraying apple trees. Spray is forcefully applied into the calyx, combating the codling moth. Mfg. by E. C. Brown Co., Rochester, N. Y.

per sulphate to 100 gallons of water. These applications were made while the trees were entirely dormant, and also when the buds were well swollen.

The results obtained were quite uniform throughout, the trees were not perceptibly injured and the amount of



**FRUIT TREE BARK BEETLE (SCOLYTUS RUGULOSUS)**  
a, Adult beetle; b, Same in profile; c, Pupa; d, Larva. (From Chittenden.) Attacks plum in preference, and the apple, peach and cherry are about equally attractive. Pear, quince, apricot, nectarine, mountain ash and Juneberry are also infested.

mula, 5 per cent commercial sulphuric acid and 10 per cent ferrous sulphate, with water, applied thoroughly. In this experiment twigs and buds were killed, but not to the extent as with 10 per cent sulphuric acid. A few of the mildewed twigs remained alive, and two of these put out mildew infested buds. The tree did not make a specially healthy growth and was badly mildewed by midsummer.

There has been a large quantity of spraying with lime-sulphur solution during the last two years. The strength used has been that recommended for the San Jose scale, that is the 1-1-3 and 1-1-4 formulas or their equivalent in the commercial solution. The applications have been made during the entire dormant period and under all weather conditions. It would seem, then, that this large amount of commercial spraying should afford the best possible data upon the efficiency of the lime-sulphur solution against the winter form of the mildew. Our observations have shown that the mildew develops from the infected shoots, apparently unchecked even by the most thorough lime-sulphur applications.

Lime-sulphur three times the usual strength (commercial solution 1 to 2); applied to three-year-old Bellflower; date, February 21, 1908; day cloudy, temperature moderate. The application was very thorough in the endeavor to cover all mildewed twigs. The deposit made by



Photograph by James H. Beattie

**STEAM PLANT FOR COOKING LIME-SULPHUR-SALT WASH**

this application remained all season, and was very heavy. The tree was apparently uninjured by the application, and the mildewed shoots produced infected growths.

Lye-sulphur solution (a); applied to seven-year-old Newtowns; date, February 21, 1908; day cloudy; temperature moderate; formula, potash lye 2 pounds, sulphur 1 pound, water 4 gallons. Applied thoroughly in order to cover mildewed tips. This application killed greedy scale, brown apricot scale and the eggs of the canker worm. The tree developed quite normally with the exception that some of the blossom buds seemed to be retarded, the small leaves about the blossom clusters were affected by spot injury and premature falling to a greater extent than the unsprayed trees. The mildewed twigs produced very healthy growths except in two instances where infected shoots developed.

Lye-sulphur solution (b); applied to two seven-year-old Newtowns; date, March 19, 1908; day clear, warm; formula, 600 grams potash lye, 500 grams of sulphur, 4 gallons of water. The application was thorough, and killed scale insects the same as (a). The buds were beginning to expand, but were apparently uninjured by reason of the application. The mildewed twigs produced infected growths to practically the same extent as the checks.

Copper sulphide and lime-sulphur solution; applied to seven-year-old Newtowns (12 trees); date, December 2, 1908; day clear and warm; formula, 7 pounds bluestone, 6 pounds lime, 50 gallons of lime-sulphur solution per San Jose scale formula. The application was very thorough to make sure of wetting the mil-



TWIG WITH LARGE CLUSTER OF EGGS OF BROWN MITE

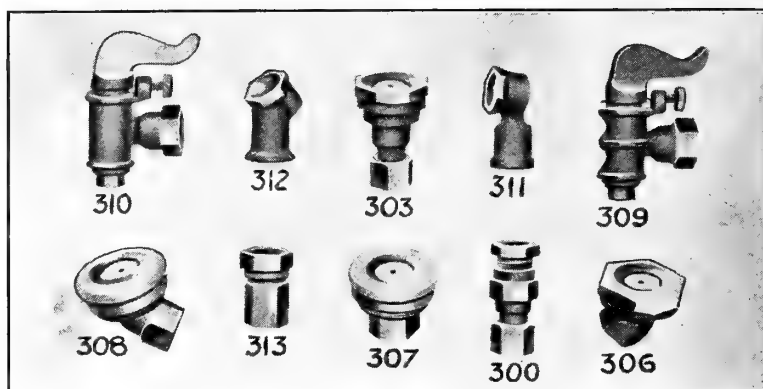
Original. Miss M. A. Palmer, delineator.  
Colorado Experiment Station.

dewed twigs. The results were not distinguishably different from those that were obtained by the use of lime-sulphur solution or bordeaux.

Pruning Off Infected Twigs: This method of winter treatment is theoretically efficient, but impractical unless supplemented by other means of control. If all the mildew infected buds and twigs could be removed the disease would certainly be checked, but this is impossible when the trees become large.

Reviewing the results of these winter treatment experiments, it is quite evident that no method has yet been discovered which gives even the remote hope of success. The wintering-over fungus upon the mildewed twigs appears so resistant that even most thorough applications of the strongest fungicides do not kill it. The lye-sulphur solution (a) apparently accomplished something, but (b), which was practically the same thing, gave no results. The only application destroying the mildew completely was the 10 per cent sulphuric acid treatment, and this was accomplished by killing all the twigs that supported the mildew. Considering the nature of the materials used in these experiments, it is very improbable that any substance will ever be discovered which will be useful against the mildew as a winter spray.

In experiments with substances that were applied during the growing period bordeaux mixture is naturally first thought of when the subject of fungicides is considered, and as has been previously stated, we have had most excellent opportunities for observing its effect on mildew. Applications of bordeaux, such as are made for the control of the apple scab, have very little permanent effect upon the mildew. To control the mildew this fungicide would have to be applied very frequently, perhaps every ten days during the growing season. The cost of such frequent spraying is in itself prohibitive, but the injurious effect on the trees would perhaps be more objectionable. It is now quite well understood that the bordeaux mixture must be applied

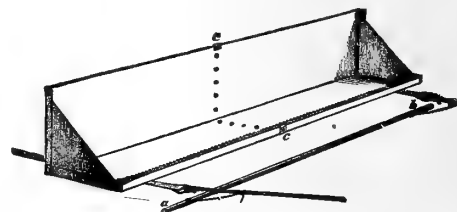


A FEW OF THE POPULAR NOZZLES MANUFACTURED BY THE BEAN SPRAY PUMP COMPANY, SAN JOSE, CALIFORNIA

For description see Catalogue No. 25

with caution and in limited amounts in order to avoid characteristic injurious effects.

Bordeaux mixture, when applied thoroughly to tender mildewed shoots, frequently kills most of the leaves within three or four days of the time of application, such applications do not, however, kill the mildew upon the stem of



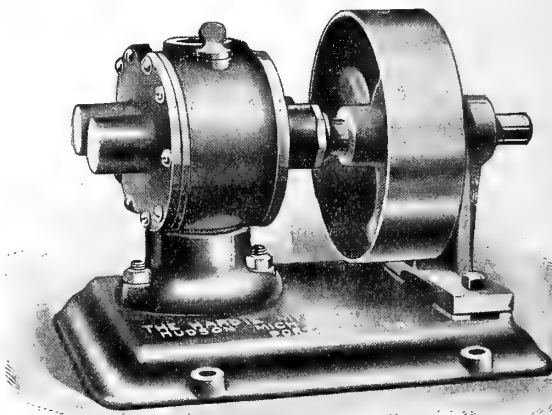
HOPPER DOZER OR HOPPER PAN  
(After Riley)

in the buds, so that fresh infected shoots are soon put forth.

In order to determine the effect of a single very thorough application of bordeaux the following experiment was tried:

Applied to three-year-old Bellflower tree; date, July 25, 1907; temperature moderate, fog morning and evening; formula, 5-5-50; applied very thoroughly in order to cover mildewed twigs. The mildew was subdued temporarily, but by

Continued on page 59



PEERLESS TANK FILLING PUMP  
Manufactured by The Hardie Manufacturing Company  
Portland, Oregon, and Hudson, Michigan



There is no spraying which will cure everything. Use the ones which fit your case. For information about insects, pests, plant diseases, and spraying, write to the Botanist or the Entomologist of the Experiment Station, Pullman, Washington.

Washington Agricultural Experiment Station, Pullman

R. KENT BEATTIE, *Botanist*  
A. L. MELANDER, *Entomologist*

## Spraying Calendar for 1911

Popular Bulletin No. 33, Jan. 1, 1911

When to Spray	What to Use	What to Spray for	Notes
<b>FALL</b> Just after the leaves fall.  Especially for Western Washington	Sulphur-lime 3° Beaume	Apple cankers Scale insects Eggs of green aphids and red spider Pear leaf blister mite Woolly aphids Eggs of tent caterpillar Moss and lichens Rabbits and field mice	This spraying may be preceded by a spraying of bordeaux as soon as crop is picked: for canker only.  Write for bulletin on sulphur-lime spraying.
<b>WINTER</b> While the buds are swelling Usual spraying where there is no canker	Sulphur-lime 3° Beaume	Bud-moth; twig borer Peach leaf curl Scale insects Eggs of green aphids and red spider Pear leaf blister mite Woolly aphids Rabbits and field mice Mildew	Too early spraying will miss these.  Write for bulletin on sulphur-lime spraying.
<b>SPRING</b> (1) When the flower buds are ready to open (2) While last blossoms are falling	Sulphur-lime  Lead arsenate, 1-50	Apple scab New York apple canker Prune brown rot or fruit mold  Codling moth  Bud-moth; twig borer Caterpillars	Spray when central flower of cluster is about to open.  Use a bordeaux nozzle with a crook and spray with force from a raised platform directly into every flower. Repeat immediately. If so applied, these sprayings are usually sufficient. Keep a few trees banded. If many worms are trapped, spray. Write for codling moth bulletin.
<b>SUMMER</b> When pest appears	Sulphur-lime 1.5° Beaume  Tobacco (or kerosene emulsion)  Lead arsenate  Sulphur-lime 1.5° Beaume  Bordeaux	Apple scab New York apple canker Aphis (cherry aphids, etc.) Woolly aphids on branches Red spider Oyster shell bark louse Leaf hoppers Pear and cherry slug Caterpillars Colorado potato beetle Fruit spot (Baldwin spot; punk rot) Mildew Red spider Young of oyster shell louse Trunk borer; flat-head borer Flea beetles Cutworms Grasshoppers Potato blight Pear blight (fire blight of pear and apple) Western tomato blight Potato scab Smut of wheat and oats Root maggot of radish, turnip, cabbage, etc. Cabbage worms Climbing cutworms Garden cutworms Woolly aphids on roots	Not advisable to mix with arsenate of lead. Omit if there is little scab.  About June 15 for newly hatched young. Spray early, before they acquire wings. Use 1 pound to 75 gallons; or dust with lime, ashes or road dust. Use 1 pound to 40 gallons. Early in July. (Treatment in experimental stage.)  Keep trunk coated all summer; best to add excess lime.  As a repellent.  July 1-15; repeat in two weeks. If much blight near by, give third application two or three weeks later. Prune out every sign of blight, cutting well below the disease. Swab every cut with corrosive sublimate (1-1,000 of water). Clean the tool often with carbolic acid or you will spread the blight with each cut. Set out strong plants close together, or plant the seed thickly in the rows. Give best of care, shade, and plenty of water. You will probably lessen the blight. Soak seed for two hours in formalin, 1 pound to 30 gallons of water, then cut and plant. Do not plant in soil where scabby potatoes were grown. Spray the seed thoroughly with formalin, 1 pound to 45 gallons of water. Cover and let it lie in a pile two hours. Dry and plant with clean seeder. Spray soil with carbolated lime, before maggots appear. Repeat often. Cultivate well after crop is removed. Place a three-inch tarred paper collar on young cabbage plants. Paris green 1 part, bran 40 parts; mix well. Dust the plants before the worms eat in. Paris green 1 part, bran 40 parts; make a mash by adding water. Season with a little molasses, stale beer or salt. Scatter by spoonfuls before planting, or among plants. Expose the roots as much as practicable and spray with tobacco, kerosene emulsion or sulphur-lime. Root treatment is not completely reliable. To every ounce of strong potassium cyanide (poison) add 1½ liquid ounces sulphuric acid diluted with 2½ ounces water. The gas generated is extremely poisonous. Fumigate 30 to 45 minutes.
Pests controlled by other remedies than spraying		For nursery stock, use 1 ounce cyanide to 100 cubic feet For grafts and scions, use ¾ ounce cyanide to 100 cubic feet	
Fumigation for insects			

## HOW TO SPRAY

Spray thoroughly. Direct your attention to the hardest places to reach. Cover every surface. Wet behind the buds. Reach the bottom of every crack. Fill the lower calyx cup. Do not try to economize on spray.

For all orchard spraying use a high pressure pump (at least 200 pounds). Use bordeaux nozzles only. Use an eight-foot spray rod. Have a crook to set the nozzles at an angle of 45 degrees. Spray from a tower if the trees are beyond your reach.

## BORDEAUX

Bluestone ..... 6 pounds  
Good lime ..... 4 pounds  
Water ..... 50 gallons

Dissolve the bluestone by suspending it in a sack in 25 gallons of water in a barrel. Slake the lime in another vessel, adding a little water slowly, and dilute to 25 gallons. Mix the two thoroughly. Even the best bordeaux may scorch in rainy weather.

For double strength bordeaux use twice as much bluestone and lime.

## TOBACCO

Tobacco leaves ..... 1 pound  
Water ..... 4 gallons

Simmer for one hour and strain. Two pounds of tobacco dust or ground tobacco may be substituted for the leaves. "Black Leaf" extract may be used, 1 part to 65 of water.

A little Lysol added to tobacco sprays greatly increases their value, and permits further dilution.

## SULPHUR-LIME

Sulphur ..... 1 pound  
Fresh stone lime ..... ½ pound  
Water ..... ½ gallon

Slake the lime in the cooker. Add the sulphur and the water. Boil briskly till the sulphur is dissolved (about 45 minutes), stirring continually, and keeping the cooker covered. As it boils down keep adding water. When finished let settle. Use only the clear liquid, which may be stored if kept from the air. Prepared in this way, sulphur-lime should have a hydrometer reading of about 26°, a little weaker than the factory-made product.

For use, any concentrated sulphur-lime may be diluted according to the following table:

Hydrometer Test of Concentrate Degrees Beaume	Specific gravity	To Make Dilute Spray	
		Beaume 3° Sp. gr. 1.02 1 lb. sulphur in 5 gallons	Beaume 1.5° Sp. gr. 1.01 1 lb. sulphur in 10 gallons
34.....	1.302..	1 to 14 of water	1 to 28 of water
32.....	1.279..	13	26
30.....	1.257..	12	24
28.....	1.236..	11	22
26.....	1.215..	10	20
24.....	1.196..	9	18
20.....	1.158..	7	14
16.....	1.122..	6	11

## ARSENATE OF LEAD

Arsenate of lead ..... 1 pound  
Water ..... 50 gallons

For newly hatched insects it is not necessary to use it stronger. Mix well first with a small amount of water. Powdered arsenate of lead is about twice as strong as the paste. Do not use arsenate that settles quickly.

## CARBOLATED LIME

Lime ..... 10 pounds  
Water ..... 50 gallons  
Carbolic acid ..... 1 pint or more

Slake the lime with a little water, add the rest of the water and the carbolic acid.

## KEROSENE EMULSION

Kerosene ..... 2 gallons  
Whale-oil soap ..... ½ pound  
Water ..... 1 gallon

Dissolve the soap in the water by boiling, and add the suds boiling hot to the kerosene, away from the fire. The mixture is then to be agitated violently, preferably by pumping it back on itself with a force pump. After four or five minutes the mixture suddenly becomes creamy in consistence. If well made, the cream will stand for a long time without free oil rising to the surface. Unless otherwise stated, use 1 gallon of the emulsion to 12 gallons of water in spraying. One quart soft soap or 1 pound laundry soap may be used instead of the whale-oil soap.

# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF  
THE NORTHWEST FRUIT GROWERS' ASSOCIATION  
A MONTHLY ILLUSTRATED MAGAZINE  
PUBLISHED IN THE INTEREST OF MODERN  
FRUIT GROWING AND MARKETING  
ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD

EDITOR AND PUBLISHER

C. R. GREISEN, Assistant Editor

H. E. VAN DEMAN, Contributing Editor

STATE ASSOCIATE EDITORS

OREGON

A. B. CORDLEY, Entomologist, Corvallis

C. I. LEWIS, Horticulturist, Corvallis

P. J. O'GARA, Pathologist and Entomologist,  
Medford

WASHINGTON

W. S. THORNER, Horticulturist, Pullman

A. L. MELANDER, Entomologist, Pullman

COLORADO

C. P. GILLETTE, Director and Entomologist,  
Fort Collins

E. B. HOUSE, Chief of Department of Civil and  
Irrigation Engineering, State Agricultural  
College, Fort Collins

E. P. TAYLOR, Horticulturist, Grand Junction

IDAHO

W. H. WICKS, Horticulturist, Moscow

UTAH

DR. E. D. BALL, Director and Entomologist, Logan  
LEON D. BATCHELOR, Horticulturist, Logan

MONTANA

O. B. WHIPPLE, Horticulturist, Bozeman

CALIFORNIA

C. W. WOODWORTH, Entomologist, Berkeley

W. H. VOLCK, Entomologist, Watsonville

BRITISH COLUMBIA

R. M. WINSLOW, Provincial Horticulturist, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR  
IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,  
at the Post Office at Hood River, Oregon,  
under Act of Congress of March 3, 1879.

**MARK TWAIN.**—"The good that a man does lives after him." Great men are seldom appreciated to the fullest extent during their lifetime. Mark Twain will go down into history as a great author. His books, in their respective line, are considered to be masterpieces. "Roughing It," "Innocence Abroad," "Tom Sawyer" and "Huckleberry Finn" and others, each present certain phases of life in a very original way. In fact every one of his books is absolutely and entirely original, and different from anything else that has ever been written. The consensus of opinion is that Mark Twain was a humorist, yet everyone is not familiar with the fact that he was a philosopher and teacher as well. The editor has read nearly everything that Mark Twain has written with unusual interest, not only for the above reasons, but for the further reason that "Roughing It" is full of scenes familiar to the editor of "Better Fruit," in his boyhood days, as he was born in California. "Innocence Abroad" has been unusually interesting for the reason that the editor personally knew some of the individuals in this famous party. "Innocence Abroad" is not, as a great many people consider it, a work of fiction. While the names are assumed names, still each one represents a character of an individual who accompanied that party, with possible slight additions to make the character more interesting, or at other times more humorous.

Mark Twain met with severe financial losses during his middle age, and not only through his fault but through others through whom he invested his money. He immediately set to work with his own pen and his own brain to make enough money not only to pay off all of his indebtedness, but to make enough to be comfortable in after life, and to leave a good fortune. He was known for his generosity and kindness, and it was his wish that his works might be in the library of every family. Harper & Brothers, publishers of Harper's Magazine, Franklin Square, New York City, are carrying out his ideas in a way so as to enable every individual to get a complete set of works by Mark Twain, consisting of twenty-five volumes, for the sum of \$25, which is just one-half of the usual publishing price.

On account of our admiration for Mark Twain we are presenting this article for your consideration, and beg leave to say, should it interest you, elsewhere in this edition you will find the advertisement of Harper & Brothers, which will explain all of the details necessary in ordering the complete set.

We would consider it a personal favor if in writing Harper & Brothers you would be kind enough to mention "Better Fruit."

**ON ASSOCIATIONS.**—The editor of "Better Fruit" for several years was manager, and is now a director, of Hood River associations.

Personally, as well as editorially, he has advanced and indorsed and recommended fruit growers' associations at every opportunity. Many districts have written for constitutions and by-laws, and have been supplied. Advice and counsel was given as thoroughly as time would permit in the hope that such, founded on experience, might be of value to the different districts.

The fruit growers in sections where associations exist know that the editor of "Better Fruit" has continually and consistently been in favor of associations, as the fruit growers in every district where no such associations exist realize.

Consequently we wish it understood that the editor of "Better Fruit" is in favor of fruit districts forming associations. District associations can be formed with one central head, which would be of benefit for the reason that under one central selling head a district can eliminate self-competition; such organization would be of benefit to a district, particularly in sections which are too small to employ proper selling ability.

Southern California has formed the Citrus Fruit Growers' Exchange, with one central selling head, which has been a great help in every way to the orange industry of that state, and it is the opinion of many that a similar organization can be perfected for Oregon, Washington and Idaho, which will be of great benefit in properly distributing fruit, eliminating self-competition and supplying all markets systematically without glutting any or shortening others.

The fruit industry of the Northwest has been going through a process of

development for quite a number of years, and, we are proud to say, improving each year. The association idea has spread rapidly. The first association was organized in Hood River in 1893. Oregon and Washington each have about twenty-five associations and Idaho ten. Many have been organized recently. It is safe to say that there are in the neighborhood of seventy-five or more associations in these states at the present time.

**PORTLAND MEETING.**—About 100 fruit growers from Washington, Idaho and Oregon responded to the call of Mr. H. C. Atwell, president of the Oregon State Horticultural Society, and attended the meeting held in Portland January 24th and 25th, for the purpose of forming a central selling agency, or exchange, for the Northwest States of Washington, Idaho and Oregon.

Two days were spent in very earnest discussion of the problems of marketing fruit. Nearly every feature of selling, packing and grading fruit was discussed at length, and a great many views were expressed by the growers present. The delegates came from Southern Oregon, Willamette Valley, Hood River, Mosier, The Dalles and Grande Ronde Valley in Oregon, different section of Idaho, and representatives were present from Walla Walla, Wenatchee, White Salmon, North Yakima and various other districts of Washington.

The meeting was not only interesting, but instructive, educational and developing, and was instrumental in affording an opportunity to the fruit growers of these different districts to become better acquainted; a general feeling of community interests and harmony prevailed. While some had hoped that an organization might be perfected upon short notice, it was the consensus of opinion that more time would be required to mature a plan which should be generally satisfactory to the different states and their respective districts.

A committee of fifteen representative fruit growers from the different sections was appointed, which went into session on the evening of the 24th, going into the various problems thoroughly from 8 p. m. until midnight. After the committee had thoroughly discussed every feature that had been brought up before the convention they adjourned, bringing in a report the following day recommending that another meeting be held at Walla Walla on February 28th, at which meeting it is expected that the representatives from each district will present their idea in the nature of a plan for organization, which, in their opinion, will be satisfactory to their own districts and, in general, to other districts. It will be the aim of the Walla Walla meeting to formulate one general plan from all the different plans submitted, which, it is hoped, will be so carefully drawn up that it will meet with general acceptance and approval.

It was the general opinion that the fruit growers should organize into associations in the different districts. Most of the growers present felt that a central selling agency for the three states could

Continued on page 55

# \$250.00 Reward

## IN GOLD COIN

The above reward is offered for competent proof that Ortho Lime-Sulphur Solution is even equaled or matched by the average output of any other lime-sulphur plant in the United States or Canada in the following points to-wit:

- First: The container;
- Second: The average strength;
- Third: The uniformity.

Ortho Lime-Sulphur Solution is sold in 55-gallon galvanized steel drums; tests always approximately 36 degrees Beaume, about 15 to 20 per cent stronger than any other average solution. The best is never too good. The first cost is no greater than that of the weakly made. The "Ortho Way" is the best. Special prices for the month of March.

## California Spray-Chemical Co.

WAREHOUSES IN PORTLAND AND SEATTLE

WATSONVILLE, CALIFORNIA

## Compare and Contrast these two Photographs



The one on the right shows a tree that has been sprayed with "Ortho 13" Neutral Arsenate of Lead. The one on the left is a tree which was sprayed with neutral (?) arsenate of lead "just as good" as Ortho. The leaves have almost entirely fallen; the fruit is small; not 10 per cent of the fruit will pack four tiers; the fruit buds are damaged, and the probability is that there will be no crop next year.

The other tree, sprayed with "Ortho 13" Neutral Arsenate of Lead, is in perfect condition; the fruit is large; 80 per cent will pack four-tier; not a damaged leaf on the tree, nor on the ground.

"Ortho 13" Neutral Arsenate of Lead should be used in all moist climates, such as is found in Hood River, the west side of the Cascades in Oregon and Washington and British Columbia, and along the coast in California, and on all other plants in all sections, except the apple and pear.

We want to emphasize that the California Spray-Chemical Company is an organization of fruit growers, with chemists and entomologists, for the production of perfect sprays. Our knowledge is at the command of any fruit grower.

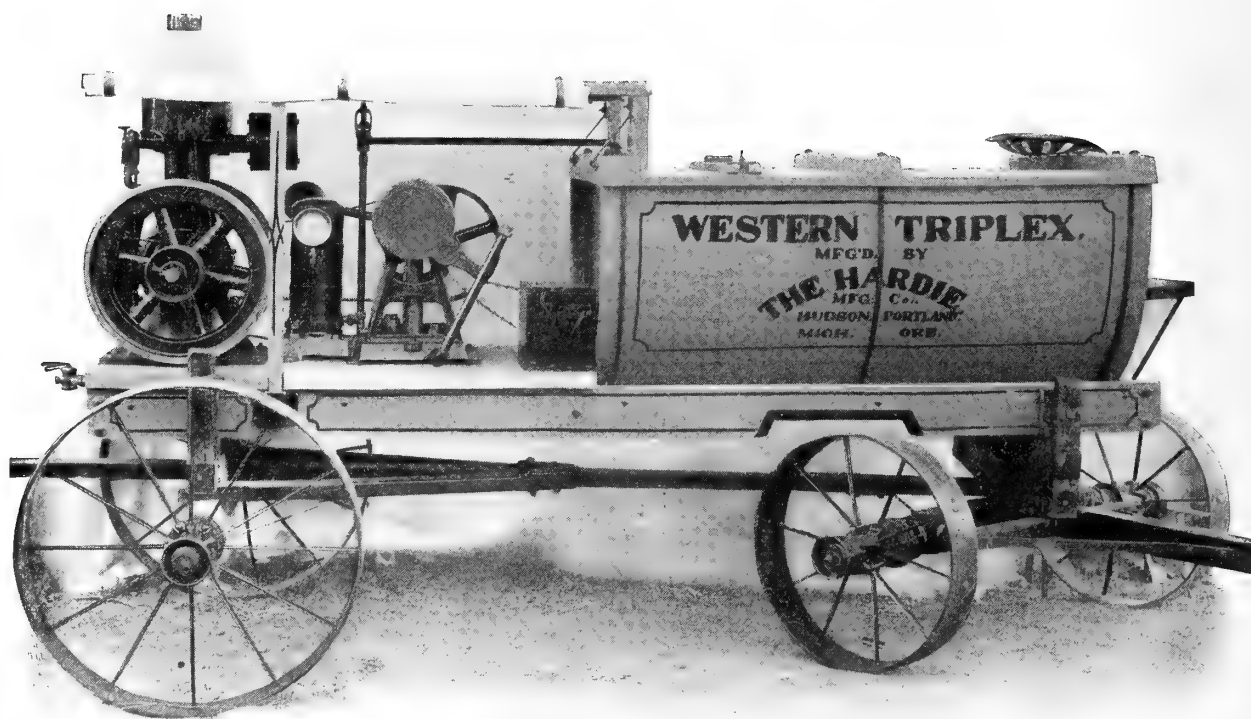
## California Spray-Chemical Co.

WATSONVILLE, CALIFORNIA

Warehouses in Portland and Seattle.



# The HARDIE TRIPLEX



Is built by specialists in Spray Pump manufacturing. Years of "knowing how" and a good factory insures you a sprayer that gives you the pressure and capacity you need, and one that anybody can run successfully all the time.

A cab with curtains covers and protects your machine from weather and spray.

On account of its light weight, your team can haul it anywhere, and its low construction allows you to operate in closely set orchards without damage to fruit or trees.

Our rotary propeller agitator insures you a uniform spraying mixture at all times, and this, with the even high pressure given by our Triplex Pump, gives you the highest yield of perfect fruit.

Yourself and the few tools we send with each machine constitute all the machinists and experts needed for successful operation.

Efficiency, lightness of weight, ease of operation and low cost of upkeep leave in the Hardie Triplex

## *Nothing to Watch but the Spray*

Write today for our 56-page catalog, giving details of construction of our different sizes of power machines, hand pumps, etc.

## The Hardie Manufacturing Company

Hudson, Michigan

49 Front Street, Portland, Oregon



## Own an Irrigated Fruit Orchard

*in the famous*

# Bitter Root Valley

And Provide an Annuity for Old Age

We will plant and take care of the land during the growing period, turning over to you a bearing orchard, which will thereafter yield a competence for life. Easy terms

Send for Literature

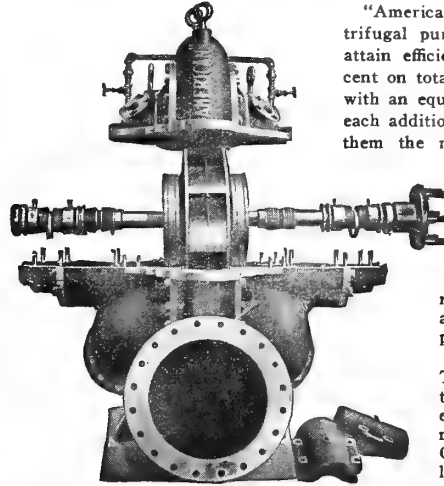
**Bitter Root Valley Irrigation Co.**

Hamilton, Montana

First National Bank Building, Chicago

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
last summer to pumps were awarded to

## "AMERICAN" PUMPING MACHINERY



"American" single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

"American" centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for "Efficiency Tests of American Centrifugals," by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## The American Well Works

General Office and Works: Aurora, Illinois, U. S. A.  
Chicago Office: First National Bank Building

### PACIFIC COAST SALES AGENCIES:

70 FREMONT STREET, SAN FRANCISCO  
341 SOUTH LOS ANGELES STREET, LOS ANGELES  
SECOND AND ASH STREETS, PORTLAND, OREGON  
1246 FIRST AVENUE SOUTH, SEATTLE  
305 COLUMBIA BUILDING, SPOKANE

# Irrigation is King—

and the King of all Apples is grown in

# Spokane Valley

We received "THREE FIRST PRIZES" at the Third Spokane National Apple Show, held in Spokane November, 1910, which is conclusive evidence that we produce as high grade apples as are produced anywhere in the Northwest.

In addition to this, we have an ideal climate, best of transportation, and in view of the fact that our properties are located two and a half to twelve miles from the Queen City of the Inland Empire, "SPOKANE," with a population of over one hundred thousand, affording unexcelled markets, with very best social and educational advantages, this should appeal to anyone looking for a comfortable as well as a profitable home.

Why not invest in land with all these advantages, obtainable for less money than can be bought in other districts.

*Write for Booklet, "Trip Through the Spokane Valley."*

## Spokane Valley Irrigated Land Co.

NO. 401 SPRAGUE AVENUE

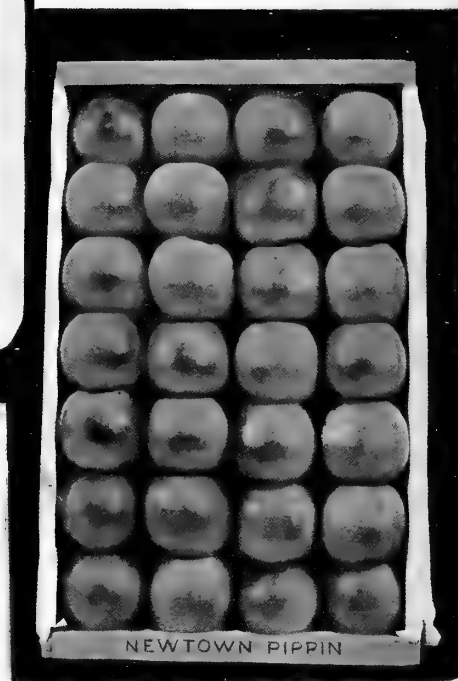
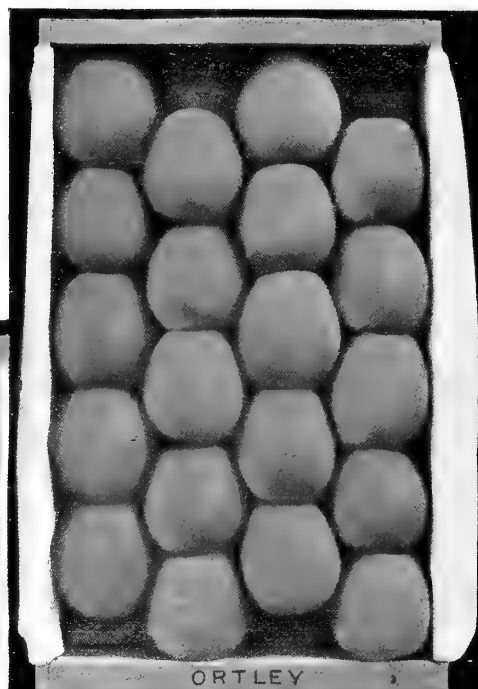
Incorporated

SPOKANE, WASHINGTON

"Within the Shadow of  
Mighty Mount Hood"

"Where  
the rain and sunshine  
meet"

There grow the finest  
and  
most delicious apples  
in all the wide,  
wide world



HOOD RIVER  
FAMOUS  
COMMERCIAL  
PACK

# HOOD RIVER

"THE MODERN GARDEN OF THE HESPERIDES"

Every apple picked by hand and packed in the most scientific manner under  
the direct and personal inspection of the Board of Directors of the

## HOOD RIVER APPLE GROWERS' UNION

We take pleasure in advising the trade that for the third consecutive time  
practically the entire crop of this noted valley has been purchased by us.

The early fall varieties are now rolling and will be succeeded within a  
week or two by the noble NEWTOWN PIPPIN, the delicious SPITZEN-  
BERG, the magnificent GOLDEN ORTLEY and such other varieties as  
grow to perfection only in the Hood River Valley.

## Steinhardt & Kelly, New York

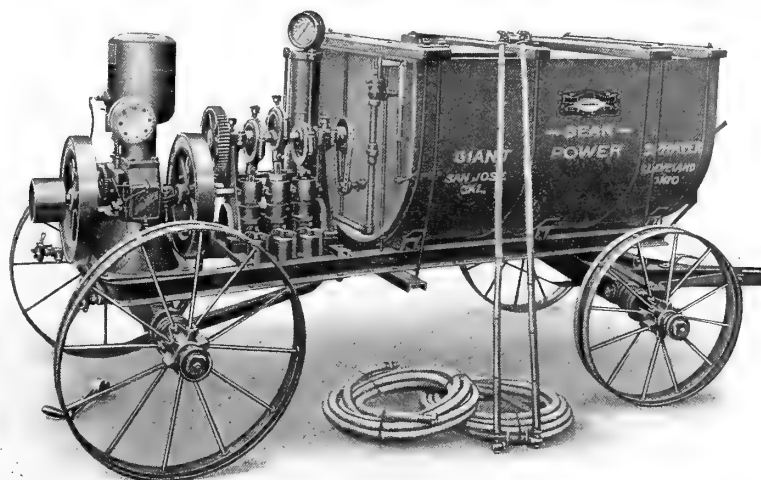
The Most Extensive Operators in High Class Fruits in the World

### NATIONAL APPLE SHOW PRIZES

Hood River won the Sweepstakes Prize at Spokane, \$1,000 in cash, for the best carload of apples, exhibited by C. H. Sproat, manager of the Hood River Apple Growers' Union, grower and exhibitor; scored 99 $\frac{1}{10}$ . Hood River won the cash prize, \$250, for the best carload of Newtowns; scored 98 $\frac{1}{10}$ ; exhibited by Avery Bros., Hood River. Hood River won the cash prize, \$250, for the best carload of Spitzbergers, exhibited by C. H. Sproat; scored 97 $\frac{1}{10}$ . Hood River won the Sweepstakes \$500 solid silver trophy cup, given by the Chamber of Commerce, Chicago, 62 affiliated bodies, for the best carload of apples exhibited, under the auspices of the National Apple Show, Spokane. This car was exhibited at Chicago. These prizes were won by members of the Hood River Apple Growers' Association, and the apples are being handled by Steinhardt & Kelly.

# BEAN SPRAY PUMPS

FIRST IN  
POINT  
OF  
TIME



FIRST IN  
POINT  
OF  
MERIT

You're ready now to decide on a spraying outfit. You're not debating the advisability of a sprayer—you've settled that long ago. But when it comes to the actual choosing of an outfit the average fruit grower is absolutely at sea. His confusion is excusable, too. There are so many spraying outfits on the market, so many claims and counter claims, and such extravagant advertising that the problem confronting a prospective buyer is indeed trying.

For over a quarter of a century, now, the Bean Spray Pump Co. has been manufacturing spraying outfits. It was just about twenty-six years ago that John Bean invented the spray pump having an air chamber, and erected the first spray pump factory in the United States. Since that time there have been at least thirty different sprayers put upon the market—some good, some fairly satisfactory and some absolutely worthless. Some disappeared from the market almost as soon as they were introduced, some were heard of for several years and a few of the best ones still survive. But through all these years Bean Spray Pumps have been steadily produced, and today you will find them in use throughout the fruit-growing world.

Some twenty years ago we began to furnish our pumps with porcelain lined cylinders. Immediately competitors began to warn fruit growers against them. "They are impractical," they said. "The porcelain will soon crack and chip off," "Porcelain lined cylinders will never prove satisfactory."

Despite these ridiculous assertions, we have yet to find the first Bean porcelain lined pump cylinder that has not given satisfaction.

We use bell metal ball valves in all our pumps. However, the idea has been copied, and you'll find this excellent feature in other pumps today. But our patents are such that other manufacturers cannot use our easily removable seats and covers. In all other pumps except ours you'll find that the seats and covers screw in. Ours do not. Bean seats and covers can never corrode tight—whereas, we have often actually had to chop out the valves from some pumps that we have taken in on exchange for our outfits. Any orchardist who has ever used a spray pump knows what it means when we say that a Bean valve can be reached in ten seconds.

There are no stuffing boxes in any of our pumps. Hence there can be no stuffing box trouble—no leaking,

and squirting, and endless temper-trying bother.

Do not misunderstand us. We do not claim to have the only good line of spray outfits. We do claim, however, that no other line embraces so many excellent features, and no line is so altogether complete. The Bean line ranges from the smallest hand pump to the largest power outfit. Our Bean Magic Pump is the only hand pump that one man can operate continuously at high pressure.

Read a detailed description in our new catalog.

All Bean Power Sprayers have steel platforms, standard makes of engines, perfect agitation, low speed, large capacity, and are carefully tested for high pressure. All parts are made through jigs and templates, and may be ordered by catalog numbers. The various parts are, therefore, easily replaced, which means that when you own a Bean—you are liable for no big repair bills.

Decide on a Bean and you'll decide right. We deliver from nine different points in Oregon, Washington, Utah, Idaho and Colorado, and all orders are promptly handled. If there is no Bean agent in your town write direct to us for quotations and our new 1911 catalog. Tell us what kind of a sprayer you're interested in.

## Bean Spray Pump Co.

213 W. Julian Street, San Jose, California

**"EVERYTHING FOR SPRAYING"**

WRITE FOR YOUR COPY OF OUR CATALOG

EASTERN FACTORY: CLEVELAND, OHIO



AS IT COMES FLAT

# "Save-Time"

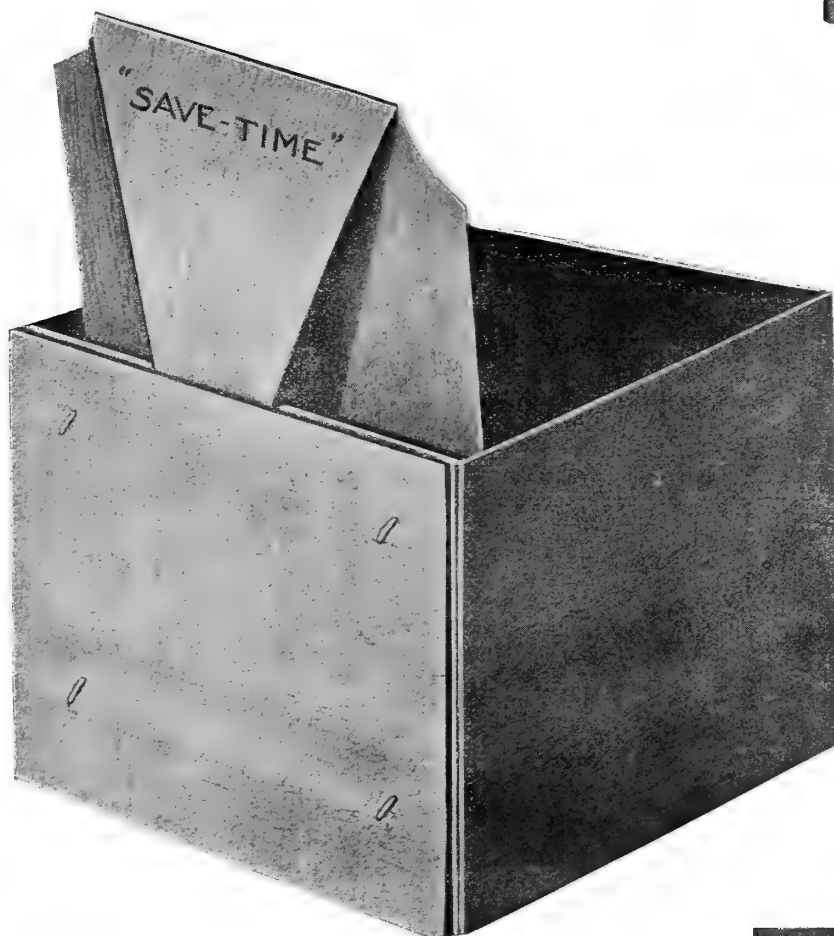
SIMPLY PERFECT

## Folding Berry Box

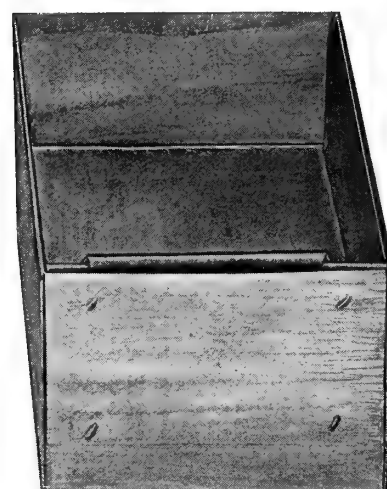
Made from Pacific Coast Spruce



AS IT OPENS



AS IT FASTENS DOWN



AS YOU FILL IT

DON'T STAPLE  
SAVE YOUR TIME  
WHEN YOU  
NEED IT

PICKERS WILL  
SET UP THIS BOX  
IT IS SO EASY

PACKED  
THREE BUNDLES  
TO A  
THOUSAND

ASK YOUR  
DEALER OR WRITE  
OUR AGENTS  
OR US AND DO IT  
EARLY

EASILY MADE UP

NO BREAKAGE  
OR WASTE

SOLID ONE-PIECE  
BOTTOM

VERY RIGID

NO STAPLES  
IN CONTACT WITH  
CONTENTS

REMAINS IN  
PERFECT POSITION

MANUFACTURED BY

### Pacific Fruit Package Co.

Raymond, Washington

H. B. HEWITT, Pres. and Treas.

J. H. HEWITT, Vice Pres.

O. C. FENLASON, Sec. and Mgr.

Agents Portland, Oregon, Territory:

STANDARD BOX & LUMBER CO.

East Pine and Water Streets  
PORTLAND, OREGON

### WASHINGTON MILL COMPANY

Agents Spokane Territory

Spokane, Washington

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



## Profits Without Worry

Are you one of the many people who know the Hood River apples, their quality, and the profits to be derived from producing them?

Are you unable to share in the profits of this wonderful business because you have not enough capital to own an orchard or cannot leave your present pursuits to engage actively in apple culture? If you are, write at once for the prospectus of the Oregon Apple Company of Hood River.

This company has been organized for the purpose of producing a profit from the growing of apples. To this end 300 acres of the best apple land in Hood River Valley has been purchased, and the services of the well-known horticulturist, George I. Sargent, as manager, have been secured. Mr. Sargent will have charge of the planting and care of the tract, which insures from the outset a high-class orchard.

The capital stock of the Oregon Apple Company of Hood River is \$300,000, of which \$60,000 is preferred. The common stock has been subscribed, with which 300 acres of the best land in the upper Hood River Valley has been secured, together with the larger part of the necessary additional operating capital to be supplied by profits derived from the use of the land between the trees. In order to further assist in the development of the tract, this issue of preferred stock is being made. This stock is preferred in dividends to the extent of the first 10 per cent earned, and shares with the common stock on profits from the sale of apples greater than the first 10 per cent.

This stock is issued in \$10.00 shares and is sold at par. Should the investor wish to pay for it in monthly installments through a period of five years, he may do so by paying 20 cents per share per month for fifty months.

A discount of 8 per cent, simple interest, will be allowed for cash.

This stock is non-cumulative and non-assessable.

This proposition lets you have orchard profits without the care, worry and work of operating.

It lets you have orchard profits without the usual large cash purchase price of a high grade orchard.

It gives you a high rate of interest on your savings.

The operating expenses of this large tract will be much less per acre than the operating expense on a small tract of ten or twenty acres.

The equipment needed will be much less than that needed on 300 acres subdivided in the usual ten-acre tracts.

Consequently the profits will be greater.

The assurance to the preferred stockholder rests in the fact that the common stockholders are so confident of the profits to be accumulated from these orchards that they are delivering the land, part of the running capital and services for five years, having no share in the profits from the sale of these apples until the preferred stockholders have been paid their 10 per cent dividend, and are then willing to share equally with the preferred stock in all amounts greater than this 10 per cent. This acts as an insurance to the preferred stock that high class care will be given in order to accumulate profits sufficient to pay dividends on the common stock.

Write for further information today.

### THE OREGON APPLE COMPANY OF HOOD RIVER

21 Heilbronner Building  
HOOD RIVER, OREGON

337 Railway Exchange Building  
PORTLAND, OREGON

## THE Sunnyside Nursery Company

Capital paid up, \$100,000

WE HAVE NO AGENTS  
SELL DIRECT

**G**ET our prices and save money. Trees first-class. We lead, others follow. Have several hundred thousand finest peach trees ever grown in the West. Cherry, pear and apple in numbers that foot up millions. If planted in a line would make over three rows, the usual distance of planting, from Seattle to New York city.

WRITE US AND MENTION  
THIS PAPER

Main Office

SUNNYSIDE, WASHINGTON

Editorial—Continued from page 48

be built upon these associations, with the different districts as units for a base, with greater rapidity than if an exchange endeavored to organize on individual memberships.

It was also the idea of the delegates present that such an association should be owned and controlled by the fruit growers. The idea will probably prevail at the Walla Walla meeting to form a directorate consisting of one or more directors of associations that join the central exchange. It is to be presumed that some plan will be formulated whereby individual growers in districts where no association exists may be taken care of.

The meeting at Portland was a very enthusiastic one from every point of view, and everyone present felt that he had profited by attending it. The general impression was that good would come out of this meeting, and it is expected that the meeting at Walla Walla will develop a definite plan for organization. Fruit growers generally are invited to attend the Walla Walla meeting February 28th.



**YAKIMA VALLEY ASSOCIATION.**—For some time past prominent fruit growers in the Yakima Valley have been working on a plan to organize the district associations of the Yakima Valley under a central head. The committee in charge has done some very thorough and painstaking work, and has drawn up a plan for organization which

## Spring Shipping

Is nearly here, and if you have not already ordered you should do so without further delay.

By waiting till the last minute you may not get what you want, while by ordering now you will.

Send us a list of what you will need and we will gladly quote you on same.

Small or large orders quickly and easily taken care of.

Remember, our stock is guaranteed **true to name**, is thoroughly matured, absolutely free from pest or disease, is perfectly hardy and has a splendid root system, which insures rapid and vigorous growth.

It must please you or we both lose money.

Do not wait another minute, but drop us a postal now asking for our large catalog. It's free.

**YAKIMA VALLEY  
NURSERY COMPANY**  
TOPPENISH, WASHINGTON

More Salesmen Wanted

# THE TROUTMAN ORCHARD HEATERS FROST'S FOE AND THE FARMERS' FRIEND

## Spring Time and Frost Time are Coming! Get Busy!

The time for experimenting and discussion has passed.

Are you going to risk losing the profits in one night,

or will you protect your investment in preparing your land and caring for your orchard, by equipping with heating apparatus?

You will lose more in one year from frost than the entire cost of an insurance policy in the form of orchard heaters.

Twentieth century methods have provided against the prodigious losses incurred in the past by frost ravages, and orchard heating

must be adopted and recognized as a branch of scientific and modern orcharding.

Any one cold night and Jack Frost will reap the harvest of your

investment. Time is short and we urge you to place your orders promptly.

### WHAT HEATER TO BUY

Confusing at first, but this problem can be solved without much difficulty.

Efficiency and Economy are what you want in an orchard heater. The necessary heat with the least expense.

Now that is what you get when you purchase the "Troutman."

This heater produces an equal amount of heat and consumes 50 per cent less fuel than any other known device.

Evidence of this important fact, which has never been denied by our competitors, is given by prominent growers all over the country, and numerous competitive tests have proved it.

Are you satisfied? If not, place your order and we'll show you.

### REGARDING RESERVOIRS

Do not use large heaters for the purpose of decreasing the fire area. Use as many large heaters as you would small ones, confining their use, as it is intended, as a

Reservoir. Our No. 3 "Reservoir" Heater holds six gallons and burns thirty-five hours,

and we highly recommend it when used as a reservoir. Small fires well distributed are

far more effective than a smaller number of the large fires.

Troutman Heaters are manufactured in all sizes and always give satisfaction.

### THE TROUTMAN FROST FIGHTING APPARATUS IS COMPLETE

Look at our Year Book and Government Bulletin.

Every one who has used them attests their efficiency.

And we can supply you with Rapid Lighters and Frost Alarms.

Do not delay! The time is here.

Send us your name and we will convince you.

**The Round Crest Orchard  
Heater Company** Canon City, Colorado

it is believed will be generally acceptable to the majority of districts in Yakima Valley.

At the meeting held recently M. E. Olsen, of Parker, was elected president; G. E. C. Johnson, vice-president; W. P. Romans, secretary; E. M. Sly, treasurer; J. H. Robbins, manager, and J. T. Donan, now of Sacramento, traffic manager. The executive committee consists of Olsen, Sly, Lowther, B. D. Thompson and W. I. Huxtable.

Thirteen of the local districts have been organizing, each represented by two trustees in a central body, which will make twenty-six trustees altogether. The districts represented are the following. North Nob Hill, W. I. Huxtable, G. E. C. Johnson; South Nob Hill, Dr. Granville Lowther, J. O. Jeffrey; Granger, B. D. Thompson, R. E. Pearce; Sunnyside, H. W. Turner, Frank Schafer; Prosser, Morris Henry, W. S. Hunt; Selah, A. J. Pressey, P. W. Cornue; Lower Naches, John Doble, S. B. Shiley; Fruitvale, J. A. Adams, C. L. Miller; Parker, M. E. Olsen, E. A. Hewes; Donald, H. E. Angel, Jesse C. Childs; Emcrald, J. T. Baird, M. G. Merrill; Grandview, J. M. Hogeland, E. F. Blaine.

◆ ◆ ◆

**FRUIT GROWERS' ORGANIZATIONS.**—Many reports have come to this office, and at various times we have published a notice of the different districts that have formed fruit growers' associations. Recently a great many have been formed, and we regret that we

## WAGNER CREEK NURSERY & ORCHARD COMPANY

Talent, Oregon

Send for special prices on  
Yellow Newtown Apples and  
English Walnuts.

## HEMINGWAY'S

Is the lead arsenate of the expert fruit grower. It is widely used in all of the famous fruit growing districts. Made in a factory which has specialized in arsenical manufactures for over 30 years, it has the advantage of this long experience in its preparation for the use of the discriminating fruit grower.

## Hemingway's Arsenate of Lead

### THE PERFECT PRODUCT

Possesses miscibility with maximum sticking power. Is 20% stronger than the federal law requires.

Send for booklet giving full directions for the use of Hemingway's Lead Arsenate against all biting insects.

**KERR, GIFFORD & CO., Portland, Ore.**  
Coast Agents, who carry full stocks

**HEMINGWAY'S LONDON PURPLE CO.  
LTD.**  
64-66 Water St., New York

neglected to keep a list of those formed during the past winter.

In the columns of "Better Fruit" we published a list of fruit growers' associations in the Northwest. We would like every fruit growers' association to look over this list and see if their name is included, and if not to send it in to us, so that our list may be made perfect, complete and up-to-date. For the benefit of the fruit industry in general it will be worth while for every association to do this, because "Better Fruit" is taken by all the principal fruit dealers, commission men and apple buyers throughout the Eastern States. This list is used in many ways—it is a directory for correspondents and many of the dealers send representatives to visit the different associations mentioned therein. By having the name of every association on this list it will enable you to get in touch with the Eastern dealers who will handle the fruit of the Northwest during the coming and future years.

◆ ◆ ◆

Almost the whole world knows of Hood River as a place that produces the best fruits, and all of Hood River Valley should know, and could know, that there is one place in Hood River, under the firm name of R. B. Bragg & Co., where the people can depend on getting most reliable dry goods, clothing, shoes and groceries at the most reasonable prices that are possible. Try it.

◆ ◆ ◆

*Editor Better Fruit:*  
Enclosed find \$1 for renewal of "Better Fruit." Would not be without it. Yours truly, T. L. Lawson, Gates, Oregon.

## BETTER TREES MEANS BETTER FRUIT

Nursery stock grown under careful supervision means

### GREAT ADVANTAGES TO THE PLANTER

Twenty years of practical experience in the orchard, as well as the nursery business, means that we know how to grow trees that will give results. Henry Holterman, of Creswell, Oregon, says of our stock: "Of the 1,800 apple trees purchased of you last spring, we did not lose one tree. The orchard is the best, for the time being planted, of anything in this vicinity. Sold for \$300 per acre in less than six months after being planted."

Let us figure on your want list. Our prices are right. A special discount on cherry trees for a limited time—15 to 20 per cent, according to grade and quantity.

#### LAFAYETTE NURSERY CO.

Mention "Better Fruit"

LAFAYETTE, OREGON

"As the bud or scion, so the tree." "As much difference in trees as in cows and hens."—Thornber.

### Yakima-Sunnyside Nursery Gives the Orchardist FIVE POINTERS

1. Plant trees propagated from bearing trees only.
2. Use trees with strong tops, good roots, and mature wood.
3. Be sure roots have been thoroughly protected in digging and shipping.
4. Know that there should be a man behind every tree. So know the man as well as the tree.
5. Lay well the foundation of your future orchard by getting the best of everything.

How to make these five points stick.

Write Y.-S. NURSERY

Sunnyside, Washington

## Columbia and Okanogan Nursery Company

Wenatchee, Washington

PROPAGATORS AND GROWERS OF

The Cleanest, Thriftiest, Best Rooted Nursery Stock in the  
**WORLD**

WHOLESALE AND RETAIL

SEND US YOUR ORDER

Supplying Large Commercial Orchards a Specialty

## QUAKER NURSERIES

We have a large stock of YELLOW NEWTOWN PIPPINS, SPITZENBERGS, JONATHANS, WAGENERS, ROME BEAUTIES, and all of the leading varieties of apples.

We also carry a heavy line of BARTLETT, COMICE AND BEURRE D'ANJOU PEARS.

A general stock of peaches, such as EARLY CRAWFORDS, ELBERTAS, LATE CRAWFORDS, FOSTERS, TUSCAN CLINGS, PHILLIPS, MUIR, EARLY COLUMBIA, Etc.

Small fruits in great abundance, STRAWBERRIES, BLACKBERRIES, RASPBERRIES, DEWBERRIES, GOOSEBERRIES, CURRANTS, GRAPES.

H. B. PATTERSON, MEDFORD, OREGON,  
Special Selling Agent for Southern Oregon.

C. F. LANSING, Salem, Oregon

## NURSERY CATALOG

New, handsome, instructive, up-to-date, describing

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

Free on request. Write now, mentioning this paper.

J. B. PILKINGTON, Nurseryman, Portland, Oregon

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

Will have for fall delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDE, Nurseryman

H. S. BUTTERFIELD, President

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Editor Better Fruit:

I enclose \$1 to renew my subscription to "Better Fruit," as I value it highly. It has accomplished wonders for the fruit industry and has had much to do in placing Hood River in the most enviable place it now occupies as a fruit producing section. Wishing you continued success, I am, very truly yours, E. M. Reeves, Waverly, Iowa.

Editor Better Fruit:

You bet your life on my renewal. I have invested a number of dollars in various ways, but the hundred cents I enclose herewith are yielding the best returns. I wouldn't be without your paper, and sincerely trust that you may see fit to continue this valuable publication until time shall be no more. Yours, Alfred R. Sellenthin, Hamilton, Montana.

Editor Better Fruit:

Your kind letter and copies of the best fruit publication in the world are both here. I would like very much to swell the subscription list in Dakota, and I know I could do so. It is going to be a question with me, however, of using my limited time to the very best advantage. However, you may always rest assured that although I may not be able to represent you actively, I will lose no opportunity to boost for "Better Fruit" and its enterprising editor. Truly yours, C. Louis Allen, Aberdeen, South Dakota.

Editor Better Fruit:

I believe that my subscription expires January 1st, 1911, and herewith enclose \$5—five years' subscription in advance—which is itself testimony of my appreciation of your valuable publication. Your December issue is, without exception, the best sent out. Wishing you every future success, believe me, yours truly, Guy Seaton, Spokane Bridge, Washington.

Editor Better Fruit:

I enclose \$1 for subscription to "Better Fruit," which is the best paper I have seen on the subject of fruit. Yours truly, Jas. M. Garmany, Allegheny, Pennsylvania.

Editor Better Fruit:

Your packing number was a splendid issue, and enabled the writer to get a Union Packer's Number from following your instructions. Yours very truly, W. E. Clark, Mt. Hood, Oregon.

## Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

Stewart Hardware & Furniture Co.

22,000 feet floor space Hood River, Oregon

## WE HAVE THE FOLLOWING TREES UNSOLD TO DATE

These are all good, clean, strong, exceptionally well-rooted one-year-old trees. All budded or grafted from the best bearing trees in the Wenatchee Valley. Will be pleased to book your order for what you will need for spring planting.

Winesap, 8,340	W. W. Pearmain, 145
Rome Beauty, 2,800	Winter Banana, 695
Delicious, 5,500	Yellow Newtown, 160
Jonathan, 4,120	McIntosh Red, 385
Stay. Winesap, 2,000	Y. Transparent, 50
Grimes' Golden, 530	Spitzenberg, 3,830
Champion, 625	King David, 550
Ben Davis, 250	Carolina Poplar, 200
Transcendent, 85	Bartlett Pear, 2-year, 800

We also have the following scions cut from bearing trees in the Wenatchee Valley in our cellar to offer, which can be shipped on short notice.

15,000	Delicious Scions	10,000	Winesap Scions
16,000	Jonathan Scions	10,000	Spitzenberg Scions

### The Cashmere Nurseries

Located in the Wenatchee Valley

G. A. LOUDENBACK, Prop. Cashmere, Wash.

Reference:  
First National Bank of Chicago

Telephones  
Randolph 3412  
3413

## Gibson Fruit Company

(Not Inc.)

WHOLESALE COMMISSION  
SHIPPERS' MARKETING AGENTS  
FRUIT AND PRODUCE

Codes: Our own Cold Storage Plant on premises  
Capacity 200 Cars  
Modern Economy 181 South Water Street  
Revised Economy CHICAGO  
Revised Citrus

# Where will the Apples Go ?

Within ten years—even five years—the yield of apples in the great Northwest will have increased greatly over the present output. Some say 100 per cent—some say more.

Will the consumptive demand show a sufficient increase to take care of the surplus?

If not, what will become of the apples?

Oh, yes, this is theory, but just wait and see if it isn't a matter worthy of serious consideration.

We don't pretend to offer any suggestions beyond the strenuous efforts we have been making to expand the trade in box apples to the maximum. This season we have handled successfully over 1,200 cars, which have been shot to the four points of the compass. That is selling some apples, when you come to think it over—and we want to emphasize the fact that we have put all this vast array of fruit in line for "consumptive channels" with the least possible delay and expense and with quite general satisfaction to growers and buyers as well.

But what of next season, and the next?

We're thinking and planning. It is a matter of serious concern to us, this SUCCESSFUL marketing of Western Box Apples, as well as other fruits.

Those interested in getting the most for the present and the best for the future out of their ranches and orchards should not delay writing us about marketing their output the coming season, as well as hereafter.

## Gibson Fruit Company

## You Want the Best?

WE HAVE IT IN

# TREES

They have the highest possible developed root system. It's the root which counts

Mr. Buyer:

No matter what quantity you may require, let us figure with you on your wants for this season, or send for our price list, and if you entrust your order with us we feel certain of retaining you as a permanent customer.

You will get what you order

## Yakima and Columbia River Nursery Co.

North Yakima, Washington

Growers of  
Selected Yakima Valley Fruit and Ornamental Nursery Stock

"NONE BETTER"

Salesmen — A few wanted. Write for terms

# MOUNT ARBOR NURSERIES

E. S. WELCH, PROPRIETOR

133 CENTER STREET, SHENANDOAH, IOWA

A Full Line of

## General Nursery Stock

Apple Seedlings—A surplus of No. 3, suitable for lining out.

Apple Grafts—Piece and Whole Root, made to order.

Apple—2 to 3, 3 to 4 and 4 to 5 feet.

Cherry Trees—One-year: Bing, Lambert, Royal Ann.

Peaches

Currants

Concord Grapes

Blackberries

California Privet

Roses—Splendid stock Hybrid Perpetual, Moss, Ramblers, Climbing

ORNAMENTAL TREES, SHRUBS, VINES  
AND FOREST TREE SEEDLINGS



# KELLY'S TREES ARE TRUE TO NAME

## 2,000,000 TREES 2,000,000

For fall and spring planting. 350,000 Winesap, 350,000 Jonathan, 200,000 Rome Beauty, 100,000 Delicious and all other leading varieties in Peach, Pear, Plum and Cherry

*Before Placing Your Order Write to*

Tim Kelly, Proprietor Wapato Nursery, Box 197, Wapato, Washington

Continued from page 46

August 4, 1907, was again developing even from the thoroughly covered twigs.

In order to test out a number of chemicals at a minimum cost, the writer resorted to treating small limbs and twigs, the material being applied with an atomizer, or when dry with an insect powder gun. Such applications have the great advantage that a sufficient number can always be made to obtain average results without endangering the trees.

Copper sulphate (bluestone) one per cent solution injured the delicate foliage, especially the mildewed growths. It did not kill mildew on the stems.

Ammoniacal copper carbonate behaved like the bordeaux mixture.

Copper acetate, one per cent and five per cent solutions, scorched young foliage and caused falling of the mature leaves. Did not kill mildew upon the stems.

Copper carbonate, copper hydroxide and metallic copper failed to give appreciable results when applied as a liquid or dust spray.

Copper benzoate yielded about the same results as bordeaux mixture.

Copper sulphide, prepared by precipitating copper sulphate with lime-sulphur solution, calcium poly-sulphide, washed free from soluble sulphide. This compound applied to mildewed growths checked any further development of the fungus for two or three weeks. Tender leaves were not scorched by the application and mildew was largely prevented

from developing on the under side of the young leaves.

Iron sulphide, prepared by precipitating iron sulphate solution with lime-sulphur solution, washed free from soluble compounds. Concentration about 1.3 per cent iron sulphate. The application caused new leaves on healthy shoots to develop free from mildew, and in a normal manner. No injury to young foliage, but a few old leaves fell without wilting or losing green color. The appli-

## Fruit Trees

Jonathan, Rome Beauty,  
Newtowns, Spitzenberg,  
Grime Golden and others

Bartlett, Comice, De Anjou

*Cherry*

Bing, Lambert, Royal Ann

*Send your want list*

*Postal will bring Catalogue*

**W. C. HOPSON**

MILTON, OREGON

## TREES in Quantity, Price and Quality

Growers and importers of a full line of all nursery stocks—apples, pears, prunes, cherries, peaches, etc. Large or small orders—we fill all. Just drop us a few lines giving your list of wants, and receive offers which we know will interest you. Have always given satisfaction and can do so now.

*We want to get in touch with planters.*

**CARLTON NURSERY CO.**

Carlton, Oregon

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

**TRUE-TO-NAME NURSERY**

Phone 2002K

Hood River, Oregon

## RICHLAND NURSERY

Richland, Washington

**FRUIT TREES**

Complete stock of leading varieties of Apples, Pears, etc.

**WRITE US FOR PRICE LIST**

### NURSERY SALESMEN

Drop us a line for information regarding our splendid proposition.

Big commissions paid weekly.

**OUTFIT FREE**

**SALEM NURSERY COMPANY**

SALEM, OREGON

## WALNUT TREES

Mayette, Franquette,  
Parisienne, Etc.

Our trees grafted on the *Eastern black walnut stock*, are hardier and better for the Northwest as well as for Eastern planting. Write for price list and other information.

**The Louisiana Nut Nurseries**

Jeanerette, Louisiana

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 1 and 2 Lambert-Sargeant Building  
Corner East Alder Street and Grand Avenue  
**PORTLAND, OREGON**

## Strawberry Plants

**CLARK'S SEEDLING**  
THE KIND THAT MADE  
HOOD RIVER FAMOUS

*Rates:*

100 plants at \$1.25

1,000 plants at \$5.00

5,000 to 10,000 plants at  
\$3.00 per thousand

*Large orders at special prices*

**The Quality of our Plants is the Best**

**F. B. KIMBALL**

Successor to E. L. KLEMER  
HOOD RIVER, OREGON



C. F. WHALEY  
Originator of the  
Ballygreen System  
of Certified  
Pedigreed Trees

# BALLYGREEN SYSTEM OF PEDIGREE TREES

Selected

Certified

Combines the best practices of horticulture with honest, efficient business methods, insures the fruit grower, making it certain that he will get the kind of trees he orders and a very high quality of fruit when the trees bear.

## BALLYGREEN NURSERIES

HANFORD, WASHINGTON

WRITE US FOR PRICES



H. W. REAUGH  
Graduate  
in Horticulture  
Field Manager  
Ballygreen Nurseries

cations subdued the mildew on the stems for two or three weeks.

Sulphur was used both as a liquid and dust application in a number of different mechanical forms. Precipitated sulphur and sulphur pulverized very fine in sand gave good results as a liquid application, but were much less positive when applied as a dust. Commercial sublimed and powdered sulphur, and also sulphur powdered in lime were indifferent when used as a dust application. Finely divided sulphur, applied with water, did not kill the mildew when well established on the stems, but stopped spore production for a time. Three thorough treatments did not cure the disease on a growing water sprout where the fungus covered the stem and both surfaces of the leaves.

On twigs where the mildew only covered portions of the under sides of the leaves, thorough treatment caused most of the new leaves to develop healthy. The sulphur treatment did not injure the tender leaves, but caused premature falling of some of the older or mature ones.

Sulphuric acid was used in dilution, varying from .1 per cent to 1.0 per cent. One-tenth of one per cent had no appreciable effect either upon the mildew or the foliage. Dilutions stronger than 5 per cent injured the foliage, and did not prove effective against the mildew.

The soluble sulphides experimented with were lime-sulphur solution, potassium and sodium sulphides. These sulphides used in dilutions of 3 per cent, 1.5 per cent and 6 per cent sulphur content

all scorched the tender growth, and caused considerable falling of the mature foliage. Established mildew was not killed by the applications.

Benzoic acid, ammonium, sodium and potassium benzoates were used in dilutions varying from one-tenth of 1 per cent to 4 per cent benzoic acid content. Dilutions less than .5 per cent produced no injury, but those over 1.0 per cent injured the foliage and 4.0 per cent was very injurious. Established mildew was not killed even by the strongest applications, and the young foliage on healthy shoots was not materially benefited by the weaker applications.

Salicylic acid, ammonium and sodium salicylates used in dilutions varying from .1 per cent to 1.0 per cent salicylic acid

# A WARNING!!

"Probably the most important lesson that the orchardists of the Northwest have yet to learn is that cheap nursery trees are an exceedingly dangerous foundation on which to start an orchard—that a few cents economy on such trees at the start is many many dollars' loss in the long run."

Thus spoke one of America's greatest horticulturists on a recent visit to the Northwest. It is a warning that is well merited, for one can visit scarcely any of the newer fruit sections without being appalled by the number of weak, sickly, undersized young trees that stand as incontrovertible proof of his warning.

Any man who will plant anything but the strongest, most vigorous, healthiest trees—of **known** ancestry—trees whose breeding for generations past insure prolific bearing and disease resisting qualities is bequeathing a legacy of trouble to posterity. The first cost of a fruit tree is an insignificant cost, but the quality and pedigree of that tree is a powerful, **perpetual** factor to your success and those after you.

All of the nursery trees—apple stocks—of the **Hood River Standard Nursery Co.** have three-year-old root systems, with one-year straight tops—big, strong, healthy, vigorous trees that **will** grow when properly planted, and which will bear from one to three years earlier than the so-called "yearling" tree so promiscuously peddled about, and they will cost you little, if any, more. They are all propagated from the highest earning and best trees of the world famous **Hood River Valley**—trees whose ancestry and past performance is a matter of careful record. They are in every sense a **thoroughbred**, pedigreed apple tree.

For the season of 1910-11 we can offer a limited amount of extra size apple only. Write for catalog and price list.

## HOOD RIVER STANDARD NURSERY CO.

HOOD RIVER, OREGON

content. One-tenth of 1 per cent produced very slight injury, and 1 per cent was strongly injurious, often completely killing the young foliage. Not effective against the mildew in dilutions that did not cause serious injury to the foliage.

Picric acid, when used in dilutions varying from .1 per cent to .5 per cent, appeared to have a marked effect upon the mildew without injuring the foliage.

In some cases the mildew was removed from the upper surfaces of the leaves, and these developed their more normal green color, but the growth was much retarded and signs of injury ultimately developed.

Phenole (carbolic acid) seemed comparatively innocuous, both to the foliage and the mildew, when used in dilutions varying from .5 per cent to 2.0 per cent.

More Fruit Growers are writing us every year that they get the Best Results from

## Dependable Brand Lime-Sulphur Solution

Manufactured by GIDEON STOLZ CO., Salem, Oregon

WRITE FOR SPRAY BOOK AND PRICES

## Montana Fruit Growers

AND OTHERS OF HIGH ALTITUDE

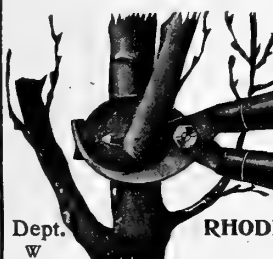
WE are now ready to book your orders for fall and spring delivery of McIntosh Red and Wageners. For Northwest fruit growers in general, a full stock of all standard varieties—Spitzenbergs, Jonathans, Winesaps, Rome Beauties, etc., and all other kinds of fruit trees and shrubbery.

THIRTY-ONE YEARS IN BUSINESS

## Milton Nursery Company

A. Miller & Sons, Incorporated

Milton, Oregon



**RHODES DOUBLE CUT  
PRUNING SHEAR**


Pat'd June 2, 1903.

**RHODES MFG. CO.,  
GRAND RAPIDS, MICH.**

**THE** only  
pruner  
made that cuts  
from both sides of  
the limb and does not  
bruise the bark. Made in  
all styles and sizes. We  
pay Express charges  
on all orders.  
Write for  
circular and  
prices.

Dept. W

EVERY PLANTER SHOULD HAVE OUR



# SEED CATALOG

FOR 1911

IT TELLS ALL ABOUT **SEEDS, BULBS** POULTRY AND BEE SUPPLIES

Write Today. If You Mention Name of This Paper You Get a Packet of Our Choice SEEDS FREE

**THE BARTELDES SEED CO., DENVER, COLO.**

Faculty Stronger Than Ever  
More Progressive Than Ever

Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

# Behnke-Walker College

PORTLAND, OREGON

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Solutions of potassium permanganate .5 per cent and 1.0 per cent did not appreciably injure the foliage or check the mildew.

Cooper's Tree Spray V2, a miscible oil, containing crude carbolic acid 5.0 per cent. Applied to young Bellflower tree with spray pump. This oil emulsion came recommended as a fungicide and insecticide. The application killed most of the foliage, but the fungus on the mildewed shoots remained unharmed.

Two small trees, a Bellflower and a Newtown, were sprayed with zinc oxide sufficiently concentrated to leave a very decided white deposit. The mildew was apparently unaffected and the foliage showed no injury for a considerable time, but eventually many of the leaves fell, especially from the Newtown.

To be continued in next edition.

Editor Better Fruit:

I enclose \$2 in payment for my subscription for "Better Fruit" for two years. It is very difficult for a man to keep track of annual subscriptions. I couldn't get along without your valuable paper, which, I think, is the very best published in the interests of horticulture. Wishing you a prosperous year, I am, yours faithfully, Thomas Cunningham, Vancouver, British Columbia.

Editor Better Fruit:

I can't do without "Better Fruit." Must have it. I get more value out of each number than the cost of the subscription. Wishing you many prosperous years, yours truly, J. H. Shawhan, Payette, Idaho.

Editor Better Fruit:

After February change my address to Sutherlin, Oregon, as I will from that time henceforth be an Oregonian on my fruit ranch, and could not keep house without your valuable book, so helpful to one in that business. Wishing you a very prosperous New Year, I beg to remain, yours respectfully, J. H. Cummings, Lincoln, Nebraska.

Editor Better Fruit:

Enclosed find \$1 to renew my subscription. I would not be without the paper. Yours respectfully, Edward B. Cory, Chicago, Illinois.

Editor Better Fruit:

No journal put out by any press in the world, to my judgment, equals "Better Fruit." From cover to cover it is brim full of the very best on fruit culture, cuts, advertising, etc. Indeed, it's the eddystone to orchard operations in the West and Northwest. Yours for better things, W. N. Yost, Meridian, Idaho.

# TREES

All Varieties  
TRUE TO NAME. BUY THE BEST

**BURBANK'S NEW STANDARD PRUNE**

We call special attention to this new prune, a cross between the Tragedy and Sugar Prune. Best for drying and shipping. Every grower should include it in his order.

**BURBANK'S NEW PATAGONIA STRAWBERRY**, the strongest grower, most productive and delicious ever produced.

California Horticulture, the Fruit Growers' Guide, 120 pages, profusely illustrated, 25 cents postpaid.

**ANNUAL PRICE CATALOGUE FREE**

New illustrated price list containing brief description of all stock carried by us will be mailed free if you refer to this ad.

**Fancher Creek Nurseries, Inc.**

Geo. C. Roeding, President and Manager

P. O. Box 10      Fresno, California

# Not Too Late Yet

If you have been delayed in securing your trees for spring planting we call your attention to the following list, which we have in one-year trees, clean, healthy and O. K. in all respects:

## APPLES

Y. N. Pippin	Winesap	Orenco
Spitzenberg	Stayman Winesap	Baldwin
Jonathan	Grimes Golden	King
Rome Beauty	Winter Banana	Red Cheek Pippin

And many other good varieties

## CHERRIES

Bing	Black Republican	Early Richmond
Lambert	Black Tartarian	May Duke
Royal Ann	Late Duke	And others

## PEACHES

Admiral Dewey	Mamie Ross	Foster
Early Crawford	Muir	Gillingham
Late Crawford	Lovell	Imperial
Elberta	Banner	Orange Cling
Early Charlotte	Champion	

And many others just as good

## WALNUTS

Vrooman Franquette, guaranteed Second Generation. The most successful walnut for the entire Pacific Coast. Literature free.

Full supply of Shade Trees, Rose Bushes, small fruits, etc. Assure yourself satisfaction by patronizing the biggest and best equipped nursery in the West.

## OREGON NURSERY COMPANY

ORENCO, OREGON

"Northwest"  
Trees Are Best

"Northwest"  
Trees Are Best

If you are intending to plant Apples, Pears, Cherries, Plums, Apricots, Prunes, Strawberries, Grapes or anything in the nursery line this coming Spring, insist on getting "Northwest" trees. We have all the leading varieties and every tree true to name. Place your order with us and you will get none but the best. *Do it Now.*

# Northwest Nursery Company

G. E. MEARS, MANAGER

Nurseries: Mabton and North Yakima.

Main Office: North Yakima, Washington.

We want a few more salesmen.

A REPUTATION TO SUSTAIN

# The Vineland Nurseries

CLARKSTON, WASHINGTON

Has to offer for Spring Delivery, 1911,  
as complete a line of Nursery Stock  
as can be found in the Northwest

All stock propagated from selected bearing trees.

Experts all over the Pacific Northwest realize that no other nursery exercises greater care than we do, and that

No more reliable stock is grown than we produce.

For fall delivery 1911, and spring delivery 1912, we shall have to offer for the first time the

## RED GRAVENSTEIN

*The New Apple Sensation*

Will tell you more about this wonderful apple, which is purely a fortunate accident of nature, later on.

## THE VINELAND NURSERIES CO. CLARKSTON WASHINGTON

Owners of The Hanford Nurseries



THE time is at hand, we believe, when the larger associations and growers are awakening to the importance of using greater care in selecting their spraying materials. A large and reliable house, whose business is exclusively the manufacturing of chemicals (as ours has been since 1839), equipped with experienced chemists and manufacturing the raw materials, insuring even selection and uniformity of quality, are better fitted, we believe, to turn out a high grade product than those not so equipped.

We would also call the attention of the fruit growers of the Northwest to the fact that we were the first to bring our proposition direct from the manufacturer to the larger associations. Prior to 1908, when The Grasselli Chemical Company entered the field, arsenate of lead could only be procured through indirect channels, and at a materially higher cost.

The Hood River Apple Growers' Union, who have used this well known brand exclusively for the past two years, owing to general satisfaction and good results received, have again expressed their preference and have renewed their contract for the Grasselli lead for the coming season.

The winners of the Grand Sweepstake Prize of \$1,000 for the best carload of apples at the National Apple Apple, Spokane, Washington, were as follows: 1908, M. Horan, Wenatchee, Washington; 1909, Tronson & Guthrie, Eagle Point, Oregon; 1910, C. H. Sproat, Hood River, Oregon. All sprayed with Grasselli lead.

Conclusive evidence of its effectiveness and adaptability to the varying climatic conditions which exist in these leading fruit centers of the West.

The Grasselli brand stands for high quality wherever heavy chemicals are used, and this standard will at all times be rigidly maintained. Yours truly, The Grasselli Chemical Co., Cleveland, Ohio.

Editor Better Fruit:

I am enclosing \$1 to pay for your fine publication another year. I certainly appreciate the quality and excellence of your work, and do not want to miss a number. With best wishes for continued success, I am, yours truly, Guy H. Gibbs, Cincinnati, Ohio.

Editor Better Fruit:

Your magazine should be taken by hundreds of orchard growers in this valley. Yours truly, A. R. Teeple, Roswell, New Mexico.

**GET CATALOG AND PRICE LIST**  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlemier

Grower of Choice

**NURSERY STOCK**

**F. W. SETTLEMIER**

Woodburn, Oregon

## WANT BEARING OREGON ORCHARD

About 10 acres Rogue River pears, or Spitzenberg and Newtown apples in Hood River or west of Cascades. State age, price, and yield of select and choice for past three years. Must stand investigation. N. A. THOMPSON, 6030 Monroe Avenue, Chicago.

## MIDWEST RASPBERRY

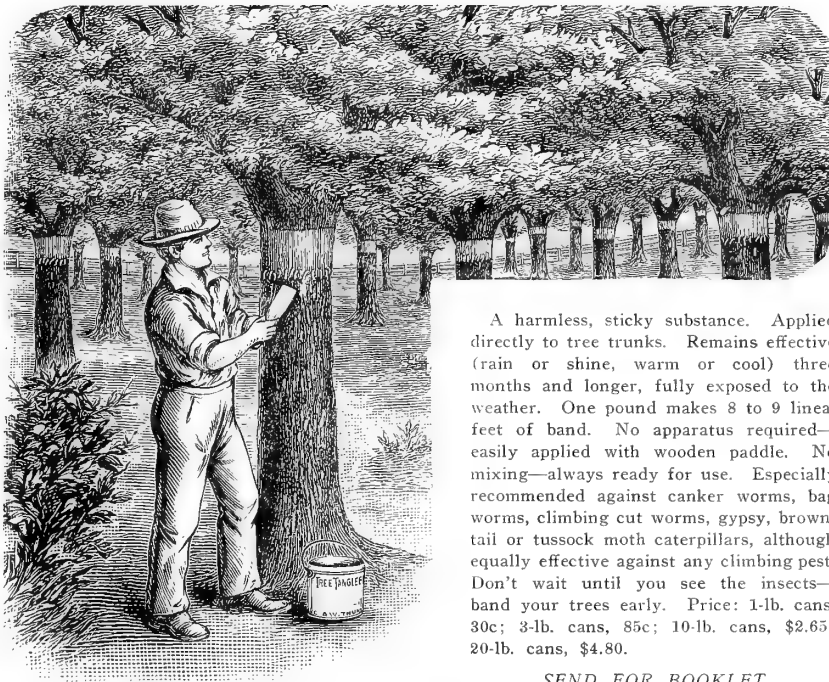
New glossy black, large, hardy raspberry. The most productive and finest flavored berry yet introduced. Send for description to

**PERU NURSERY, Peru, Nebraska**  
J. R. Duncan & Co. Box 512

Two short course students with previous experience desire employment by the middle of February in orchard where up-to-date methods are practiced. Hood River or Rogue River Valley preferred.

Address W. S., care "Better Fruit."

## BAND YOUR TREES WITH TREE TANGLEFOOT



A harmless, sticky substance. Applied directly to tree trunks. Remains effective (rain or shine, warm or cool) three months and longer, fully exposed to the weather. One pound makes 8 to 9 lineal feet of band. No apparatus required—easily applied with wooden paddle. No mixing—always ready for use. Especially recommended against canker worms, bag worms, climbing cut worms, gypsy, brown-tail or tussock moth caterpillars, although equally effective against any climbing pest. Don't wait until you see the insects—band your trees early. Price: 1-lb. cans, 30c; 3-lb. cans, 85c; 10-lb. cans, \$2.65; 20-lb. cans, \$4.80.

SEND FOR BOOKLET

**The O. & W. Thum Company** GRAND RAPIDS MICHIGAN  
Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot

### "I HAVE SO LITTLE FUNGUS

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."

Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

**PRICES:** In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY



**The Rayo Lamp is a high-grade lamp,**  
sold at a low price.

It gives the white, soft, mellow, diffused light, which is easiest on the eye; and you can use your eyes for hours under Rayo light without eye strain, because there is no flicker. The Rayo Lamp may be lighted without removing shade or chimney. You may pay \$5, \$10, or \$20 for lamps other than the Rayo and get more costly decorations, but you cannot get a better light than the low-priced Rayo gives.

Dealers Everywhere. If not at yours, write to the nearest agency of the

**Standard Oil Company**  
(Incorporated)

# Ogburn's Fruit Gathering Vessels

## THE LATEST INVENTION



**OGBURN'S FRUIT-GATHERING VESSEL**  
*Prevents Bruising Fruit, Saves Time & Money. See That Your Hardware Dealer Secures Agency For Next Season.*

EXHIBIT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON  
 NOVEMBER 14 TO 19, 1910, WHERE IT TOOK  
 FIRST PRIZE AND GOLD MEDAL

Saves money by preventing bruising fruit in handling from tree to box. Saves time by leaving both hands free to gather with, and being quick to operate. Money saved is money made.

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. The canvas bottom slides from underneath the paper and delivers the fruit on your packing table without the slightest injury.

This vessel is an oblong metal pail larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit at all.

The vessel holds one-half bushel or half box of apples, and in emptying the second time the canvas bottom eases the fruit in the vessel on that in the box without bruising or scratching, which is practically impossible with the wood or metal bottom pail.

## A Number of these Vessels Given Free

Every reader of "Better Fruit" should write at once and advise number of vessels he can use in 1911. This information is solicited to secure estimate of how many vessels to manufacture, so your orders can be filled promptly. All fruit growers writing not later than April 1, 1911, will receive special order blank with terms upon which a number of these vessels will be given free. Don't fail to write now.

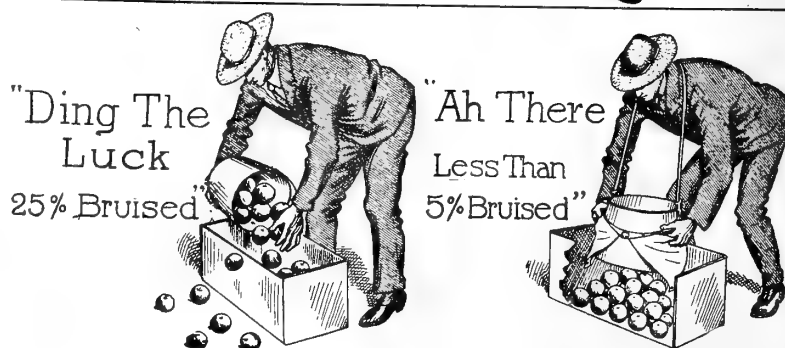
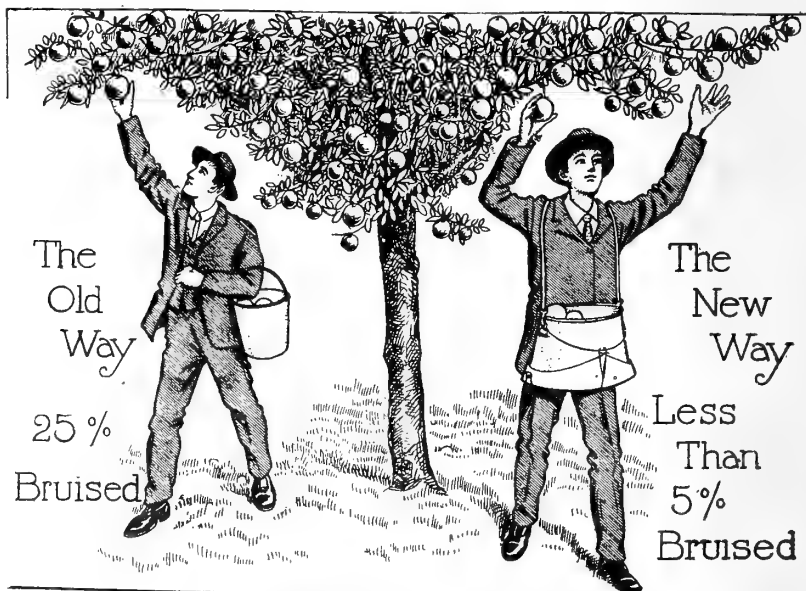
Special terms granted to dealers and agents in their respective trade districts. Secure your territory for 1911 now.

ALL GOODS SHIPPED DIRECT FROM FACTORY

Manufactured by  
**WHEELING CORRUGATING CO.**  
 Wheeling, West Virginia  
 For J. H. OGBURN, Patentee

For territory and terms, address all applications to

**J.H.OGBURN**  
 WENATCHEE, WASHINGTON



ILLUSTRATING OPERATION, OLD AND NEW WAY

The Richardson Orchard Heater is the best and only up-to-date device for the burning of oil, and that gives the greatest amount of heat and smoke for the protection against frost damage or freezing temperatures of Apple and Peach orchards, Orange, Grape Fruit and Lemon groves, Vineyards, Berry patches and Truck gardens.

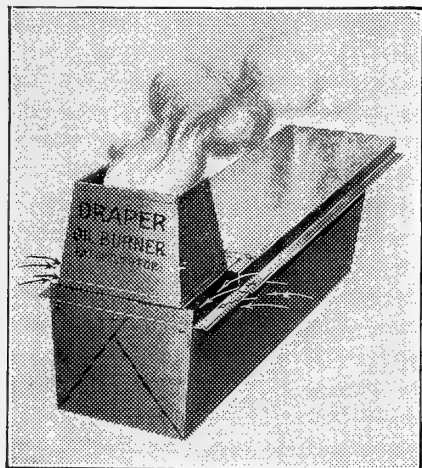
The Richardson Orchard Heater's Oil Reservoir is provided with cover and heavy metallic handles, and its oil capacity of 26 quarts, in most localities, is sufficient for a season's supply. They are made to nest, so as to store easily.

After filling reservoir with oil, there is no depreciation in the quality or character of the oil. The oil that may not be used after a season's frost fighting, can be gathered and taken to storage tanks.

The Richardson Orchard Heater's Brass Valve (specially made), the pipe connections, torch burner and fittings are standard strength and best quality.

The Perforated Burner, constructed

on scientific principles, where the oil is consumed, and the heat and smoke liberated, is one of the important features of the Richardson type. With the large reservoir and valve connection between perforated burner, a small, medium or large flame can be controlled according to weather conditions.



#### DRAPER OIL BURNER

The Draper Oil Burner is superior to all Frost Prevention Heaters that burn oil in the receptacle.

The "Draper" Seamless Oil Container, made of heavy iron, holds 18 quarts of oil; its capacity large enough to carry an oil supply without refilling, through any long period of freezing weather.

The "Draper" has a sliding cover, that, with the draft chamber on hinges, regulates the fire and consumption of oil, according to the temperature to be controlled.

Manufactured by

**Richardson Frost Prevention Co.** KANSAS CITY  
MISSOURI

## ORCHARDIST SUPPLY HOUSE

**FRANZ  
HARDWARE CO.**

Hood River, Oregon

#### APPLE AND GRAPE BOOKLETS

Telling how the \$5.00 a box Apples and Sweepstakes Winner Grapes are grown in the most beautiful orchard valley in the world; both booklets sent by mail on receipt of 10c, stamps or silver. Address Secretary Improvement Co., Clarkston, Washington.

## Paste for Labeling

"PALO ALTO" PASTE POWDER

added to cold water, instantly makes a beautiful smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss, No spoiled paste.

Paste Specialists

**Robinson Chemical Works**

349-351 Eighth Street  
San Francisco, California

## SPRAYING TREES WITH ZINC ARSENATE OF LEAD

BY ELLERSLIE E. LUTHER, WATSONVILLE, CALIFORNIA

THE use of arsenate of lead has its advantages and disadvantages. It is a very smooth paste, mixes well, when not too dry, with water. It is readily held in suspension in water in the agitating tank; a safe poison, but it has a great disadvantage. Neutral lead is slow in killing, although insects quit feeding almost immediately after eating of it. The acid arsenate of lead, as sold throughout the Northwest and in the dry and arid sections, causes a skin trouble on the apple which has been of concern to the cold storage man.

In Mr. W. H. Volck's and my investigations in the Pajaro Valley with arsen-

icals we found that only one other common insecticide could be used with safety on plants of those we tested, and these numbered many hundreds. This is arsenite of zinc. It is a light, fluffy powder, readily goes into suspension, has a great covering power and requires little or no agitation.

This material is very soluble in the stomach acids of the insects, killing insects such as the diabrotica and the California tussock moth, most resistant to arsenicals, with ease, but, unlike paris green, it is extremely insoluble in water, and the immunity from injury to plants is remarkable. On apples it has been

## SLOCOM'S BOOK STORE

**Office Supplies  
Stationery**

Ledgers, Journals, Time Books

Memorandum Books

Rubber Stamps

Souvenir Postals

Picture Frames

IF YOU WANT TO KNOW ABOUT

## OREGON

SUBSCRIBE FOR

The Chamber of Commerce Bulletin

The largest commercial magazine in the West

Devoted to upbuilding Oregon and  
the Pacific Northwest

SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

The Chamber of Commerce Bulletin

DAVID N. MOSESJOHN, Publisher

Suite 616 Chamber of Commerce Building  
Portland, Oregon

## Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. **Send for prices.**

**RAWSON & STANTON, Hood River, Oregon**

## Do You Want An Orchard In The Willamette Valley?

In order that we may dispose of our few remaining orchards, we offer a special inducement to purchasers in the way of transportation. This special offer, combined with our low prices, easy terms and a contract with many attractive features, makes this a bargain not to be found anywhere else in the fruit growing districts. They will not last long.

Write for descriptive literature and details of this special offer.

### OREGON APPLE ORCHARDS CO.

Eastern Office, Bloomington, Illinois  
Western Office, 432 Chamber of Commerce, Portland, Oregon

sprayed as thick as heavy whitewash without the least bit of injury. On small field crops, such as beans, potatoes, etc., it has given no injury, but on the peach, which is supposed to be more hardy than the bean, the injury was severe.

In the Northwest, and in all dry countries where codling moth breeds abundantly, stung apples are in great number. These apples are not wormy, but since the codling moth has left its mark they have to be rejected from "quality first." Zinc arsenite will prevent all this; it will give apples free from stings; it will raise the grade of the orchard run of fruit materially, and will lower the cost of spraying, as the equivalent of twelve cents of arsenate of lead can be

purchased in this material for less than five cents.

After discovering the applicability of this material as an insecticide, Mr. Volck and myself have proceeded slowly in the matter of recommendation until we were thoroughly satisfied with the material from the safety standpoint. As regards safety, zinc arsenite stands between neutral arsenate of lead, a material which absolutely will not injury the foliage however thick it might be applied, and acid lead arsenate, which is considered safe in most of the Northwest section. So here stands a material with safety as regards arsenical injury, in between neutral arsenate and acid arsenate, accomplishing perfect control of the codling moth, with the freedom from worm stings, at a considerable less cost.

For the last two years various orchardists have tried this material, and in every instance it has displaced arsenate of lead. Government experts have used this chemical with fine success upon hard killing insects. The Montana Experiment Station has found it to be the least injurious to the soil of all which they have tried.

◆ ◆ ◆

**BOOMING THE APPLE.**—Speaking of apples, they know how to boom the fruit in Oregon. They had an apple show in Portland last week, and while it was in progress one of the leading restaurants had on its luncheon menu the following: Apple consomme, apple salad, roast apple with hot sauce, baked apple with cream, apple dumpling with cream, apple croquettes, apple pie with whipped cream, apple pie with cream, apple pie a la mode.—Exchange.

## Winfield Nursery, Winfield, Kansas

GROW TREES OF QUALITY

Their new work, Progressive Horticulture, fully illustrated, describes trees of quality in the making

## Grow the Loganberry

One of the most prolific and profitable berries grown. Plants at \$10.00 per M.

**ASPINWALL BROS.**  
BROOKS, OREGON

## Safe, Sure, Easy

to apply, Spreads and Penetrates

### SPRAY WITH "SCALECIDE"

All injurious oils and harmful substances have been eliminated in the making of "Scalecide" and all of the soluble sulphur has been retained to give it the insecticidal value. This, combined with a powerful fungicide makes Scalecide the *most satisfactory and effective destroyer of scale and all soft-bodied insects known.*

It will eradicate all fungus that can be controlled in a dormant season

Mr. Edwin C. Tyson of Flora Dale, Pennsylvania, sold \$960 worth of apples from 54 trees that 5 years ago he considered no good and started to take out. These trees have had nine successive applications of "Scalecide."

Mr. Roy Lamer of Cobden, Illinois, sold \$12,361 worth of peaches from 2000 trees and one of his neighbors sold \$1008 worth from 65 trees treated for several years with "Scalecide."

Write for Free Sample, Full Information and Catalog No. 204

**Portland Seed Co.** Portland Oregon



## Spray Nozzles



Clipper



Jumbo

Use Bean Spray Nozzles. They cover all requirements, are carefully made from the best materials and are all hand-tested under 2a pressure of 200 pounds. Two styles are illustrated.

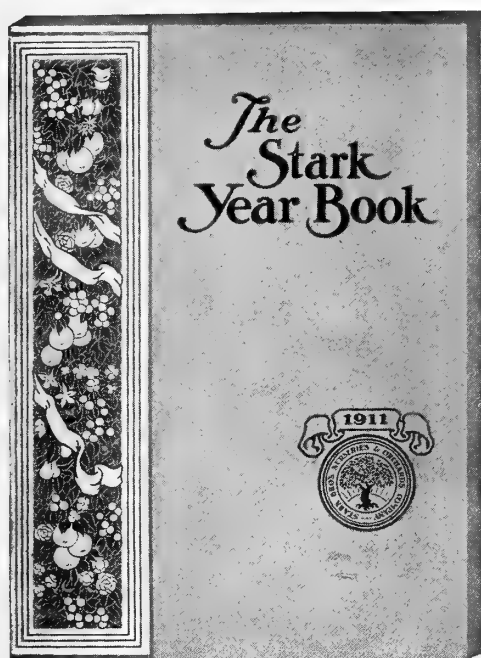
**CLIPPER**—Throws a perfect, fan-shaped spray. So made that all parts of the spray travel the same distance from the nozzle, eliminating all waste. Order from us or from your local dealer.

**JUMBO**—Throws a very large spray. Built for power outfits or large hand sprayers. Cleans itself. This nozzle, as well as the Clipper, can be supplied with ell for spraying down into the blossoms.

### BEAN SPRAY PUMP CO.

213 W. Julian Street, San Jose, California  
Also Cleveland, Ohio





# A Book that is different

**THE STARK YEAR BOOK**  
IS UNLIKE OTHER NURSERY LITERATURE

SINCE THE STARK YEAR BOOK for 1911 (Volume II) was first announced in these pages the pressure of matter has increased the size from 100 to 120 pages; the number of full page illustrations in natural colors has been increased from 23 to 31, a showing of 165 varieties of fruit and flowers instead of 113. The color work is now most comprehensive, carrying apple, crabapple, quince, pear, peach, apricot, cherry, plum, grape, currant, blackberry, gooseberry, mulberry, dewberry, clematis and roses.

These additions to The Stark Year Book have quite naturally delayed its date of issue a trifle—from January 15th to February 1st—but its readers will be well repaid for the slight delay. More than ever, The Year Book becomes a complete volume of the most helpful and practical guidance to the orchardist and fruit grower.

Two special features of The Stark Year Book deserve special mention. Where practicable, we have appended to our own descriptions, made from first-hand experience and close observation, the experience and observation of many other horticulturists. We have thus hoped to give to them that degree of definiteness and accuracy which is possible only when a description stands side by side with the weightiest possible evidence in support thereof.

We have also tried earnestly to meet many another practical difficulty of the beginner as well as of the more experienced—in a word, afford him the opportunity of getting what will be the best of all aids to success—a condensed knowledge of the whole subject.

If you have not already sent for your copy of The Stark Year Book for 1911 do so at once—fill in and send us the coupon today. Postage 10 cents. The demand for Volume II is tremendous; the edition is limited, and probably will not be reprinted when exhausted.

## Stark Bro's Nurseries & Orchards Co.

Louisiana, Missouri

BF 2-11

Stark Bro's Nurseries & Orchards Co.

Louisiana, Missouri, U. S. A.

Gentlemen—Kindly forward me Volume II of The Stark Year Book, for which I enclose 10 cents in stamps to pay postage.

Name .....

Postoffice .....

County....., State.....

I expect to plant.....trees about.....  
(Number) (Fill in date)

The planting will be done at.....  
(Give location, both town and state)

## Read This Strong Array of Expert Testimony Regarding Our Latest Spraying Material

# "BLACK LEAF 40"

From O. E. BREMNER

Secretary of California State Commission of Horticulture:

I am convinced in my own mind that "Black Leaf 40" will prove a great success on young lecaniums and other soft-bodied scale insects, also white fly larvæ (A. citri), when used in combination with a small amount of oil emulsion or soap.

I have seen its efficiency thoroughly tested on thrips, and have used the same combination, "Black Leaf 40" and 2 per cent oil emulsion, on red spider with remarkable success.

I have also used "Black Leaf 40" in combination with arsenate of lead for calyx spraying of apples, and not only prevented the attack of codling moth, but completely controlled the curl leaf aphid, which has been such a destructive pest for the past few years.

From W. H. VOLCK

Entomologist for Monterey and Santa Cruz Counties, California:

I have conducted a considerable number of experiments with "Black Leaf 40," mainly to determine its efficiency in the control of aphids, including the green aphid and the woolly aphid of the apple. All of these tests have proved the material to be highly satisfactory for the purpose mentioned.

I consider your "Black Leaf 40" better for general use than your "Black Leaf" Extract, since the amount of organic matter other than nicotine is reduced to minimum. "Black Leaf 40" can be used without leaving any stains or marks on the fruit, which is strongly to its advantage.

I find that one part of "Black Leaf 40" to 2,000 parts of water containing cresol soap is very effective in controlling all kinds of plant lice.

I shall recommend its use in preference to any other form of extracted or concentrated nicotine.

From FRED L. YEAW

California Agricultural Experiment Station:

I used your "Black Leaf 40" against soft-bodied insects, using the formula published upon your wrappers; the results were all that could be desired, the spray acting very quickly.

The "Black Leaf 40" would seem to be a very desirable kind of tobacco spray to use, because of its known strength and non-volatile qualities.

From ELMORE CHASE

Deputy Horticultural Commissioner, Fair Oaks, California:

We have used "Black Leaf 40" straight on a small block of olive trees for the black scale (Saissetia Oleae), and after two weeks we found every scale dead on the leaves which did not escape the spray. For aphid it is a complete remedy. We are using a little from one package with distillate emulsion for the scale of the olive.

From PROFESSOR H. J. QUAYLE

Entomologist California Agricultural Experiment Station:

We have tried the "Black Leaf 40" on plants of various kinds for aphid, and find it entirely satisfactory for killing these insects.

From PROFESSOR C. P. GILLETTE

Colorado Agricultural Experiment Station:

I have found a thorough application of "Black Leaf 40" in the proportion of 1 to 1,000 to either green apple aphid or the woolly apple aphid will kill 100 per cent of those actually treated.

From GEORGE P. WELDON

Field Entomologist Colorado Agricultural Experiment Station:

Have experimented with "Black Leaf 40" for the past two seasons, and am satisfied that it is just as effective in killing the various species of plant lice as "Black Leaf" Extract, which has for a number of years been our standard remedy in Colorado for these insects.

From PROFESSOR W. S. THORNBUR

Washington Agricultural Experiment Station:

We are trying "Black Leaf 40" in various ways in our experimental work, and have found it very satisfactory so far.

From DR. JOHN B. SMITH

Entomologist New Jersey Agricultural Experiment Station:

"Black Leaf 40" (Sulphate of Nicotine) proved satisfactorily effective on green plum aphid at the rate of one ounce to eight gallons of water (a dilution of 1 to 1,024).

From H. B. FULLERTON

Director Agricultural Development, Medford, Long Island:

Your "Black Leaf 40" has proven very valuable to us this year. We have used it in combating aphid, which this season have developed in unusual numbers and representing a very great number of varieties.

From A. W. MORRILL

Arizona Horticultural Commission:

It is my impression so far that for general purposes the strengths that you recommend for "Black Leaf 40" are about correct.

From GEORGE A. LAMIMAN

Horticultural Commissioner, Anderson, California:

"Black Leaf 40" seems to be a good remedy for the vine hopper on grapes. It did good work on aphid, also on thrips in general.

From PROFESSOR C. E. SANBORN

Entomologist Oklahoma Agricultural Experiment Station:

I am very greatly pleased with our experiments in which we used your products.

## Some Details About "BLACK LEAF 40"

"Black Leaf 40" is a concentrated solution containing 40 per cent nicotine by weight, in the form of nicotine sulphate.

"Black Leaf 40" is nearly fourteen times stronger than our "Black Leaf" Tobacco Extract. This means a big saving in handling—particularly over rough roads—one 10½-pound tin producing 1,000 gallons of effective spraying material against green aphid, etc.

Owing to the large dilution, neither foliage nor fruit is stained.

Like our "Black Leaf" Extract, "Black Leaf 40" may be applied when the trees are in full bloom and foliage without damage to either.

Also, "Black Leaf 40" is perfectly soluble in water—no clogging of nozzles.

## PRICES

10½-lb. can, \$12.50; makes 1,000 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine."

2½-lb. can, \$3.25; makes 240 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine."

½-lb. can, 85c; makes 47 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine."

These prices prevail at all Agencies in railroad towns throughout the U. S. Write us for the name of our agent nearest you, using the attached coupon.

### MAIL US THIS COUPON

Kentucky Tobacco Product Co.  
Louisville, Kentucky:

Please send me address of your agent nearest my station.

My Name is

My Address is

**The Kentucky Tobacco Product Co.**  
INCORPORATED  
LOUISVILLE, KENTUCKY

# PESTS UNKNOWN TO COLORADO FRUIT GROWERS

BY C. P. GILLETTE COLORADO AGRICULTURAL COLLEGE, FT. COLLINS, COLORADO

**W**HERE do our insect pests all come from? Do they spring spontaneously from the soil and moisture under the influence of the heat and light of the sun, as the ancient Greeks supposed many living things came into existence? Are new species continually being developed, or how is it that there is an insect to destroy every kind of a plant that man grows? Such questions as these often perplex the gardener, the farmer, the orchardist, and even the nurseryman. There are those present who can well remember when the Colorado potato beetle was unknown as a pest, when the San Jose scale was without a name or a record, when the dreaded Gipsy and brown-tail moths had not yet done any injury to the forest or other trees in the New England states, and when even pear and apple blight had not yet attracted the attention of the orchardist in the Middle and Western states. In fact many of our insect pests and plant diseases seem to be of comparatively recent origin.

Probably it is unnecessary to state that no insect, however minute, ever springs spontaneously into life, no matter what its environment or how favorable the conditions for its nourishment and propagation. Every insect, like all higher forms of life, is born or hatched from an egg of a parent like itself. The natural conditions in Australia for the develop-

may be due to one or more of several ment of rabbits, and the conditions in the United States for the development of the English sparrow must long have been of the best, but neither of these creatures occurred in the countries mentioned until men first introduced them. Likewise the San Jose scale did not appear in California, nor the codling moth in Colorado until someone took these insects into these localities.

Then, when an insect before unnoticed, suddenly appears in injurious numbers upon some cultivated crop it does not mean that a new form of life has sprung into existence. It does mean one of two things, however. Either the conditions for the development of this insect have suddenly become more favorable, or the insect is one that has been introduced into the locality from some distant point. If the insect is one belong-

ing in the region its increase in numbers causes, such as reduction in the number of its enemies, more favorable climatic conditions for its healthy development or a more abundant food supply.

It is from such causes as these that most of our insect pests arise. When white men began to plant potatoes on these Western plains they furnished a suitable and abundant food supply for the

## J. F. LITTOOY

CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO

LESLIE BUTLER, President  
F. McKERCHER, Vice President  
TRUMAN BUTLER, Cashier

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000

Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

CAPITAL STOCK \$100,000 SURPLUS \$20,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, President  
J. W. HINRICKS, Vice President  
E. O. BLANCHAR, Cashier  
V. C. BROCK, Assistant Cashier

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

Savings Bank in connection

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - - \$1,000,000

Surplus and undivided profits - - - - - \$600,000

Officers:

W. M. Ladd, President  
Edward Cookingham, Vice President  
W. H. Dunckley, Cashier  
R. S. Howard, Jr., Assistant Cashier  
J. W. Ladd, Assistant Cashier  
Walter M. Cook, Assistant Cashier

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

HOOD RIVER BANKING AND TRUST COMPANY

HOOD RIVER, OREGON

## THE PERFECT PRODUCT

Combines the highest standard of manufacture with chemical and physical qualities, giving sticking power, miscibility and extremely fine division. It meets the most exacting requirements of the modern scientific orchardist.

# HEMINGWAY'S LEAD ARSENATE

*Completely complies with the Federal Laws. Complete analysis showing 15 per cent arsenic oxine on every package. Send for booklet and prices*

Full Stocks Carried by **KERR, GIFFORD & CO., Portland, Oregon**

**HEMINGWAYS LONDON PURPLE CO., Ltd., 64-66 Water Street, New York**

Colorado potato beetle, which for centuries had only been able to maintain its existence upon the scattered plants of the wild species of solanum, native to the region. As a result of an abundant food supply this insect increased in numbers so rapidly as to get away from its natural enemies, and it soon made its way along the courses of the great transportation lines to the Atlantic seaboard, and even took ship and went to Europe, where it established thrifty colonies in defiance of the laws of extermination passed against it.

The plum curculio, the plum gouger, the apple curculio, the peach borer, the chinch bug of our prairie states, our destructive locusts or grasshoppers, many of our cut worms and destructive plant lice and numerous other crop pests come in this same class.

However, many of our very worst insect pests are those that are not native to the region, but which are in some way brought into it from a distant locality, perhaps a foreign country, from which it is separated by some natural barrier, such as a large body of water, a mountain range, a broad stretch of prairie or many degrees of latitude having a much warmer or colder climate.

If an insect can by some means be taken entirely out of its native habitat and placed in a region where some suitable food-plant occurs in abundance, that insect is almost certain to increase very rapidly and become a serious pest, for the reason that it has escaped from the natural enemies that held it in check in

its original home. As examples of such insects we might cite the Gipsy and the brown-tail moths. For untold ages they had fed upon the trees and shrubs of Europe, but on being brought to this country they experienced no difficulty in substituting as their menu almost the entire flora of Massachusetts, including some of the evergreens, and they have increased with such rapidity as to almost render futile man's attempt at their control. Their tremendous increase in numbers was not due to any superior nutritive value of the foliage of our trees, nor to more favorable climatic conditions, but to the simple fact that they were taken away from their natural enemies, especially the parasitic and predaceous insects and the birds, and perhaps fungous and bacterial diseases as well, that under European conditions kept them from doing very much harm.

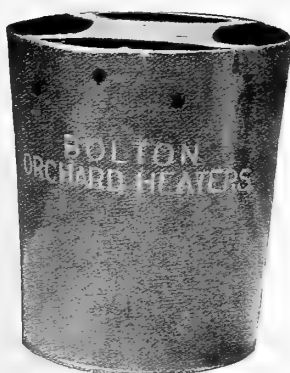
Listen to the familiar names of a few other insects of this class: The codling moth, green apple aphid, woolly aphid, San Jose scale, oyster-shell scale, peach bark louse, green peach aphid, currant saw-fly, green cabbage worm; and the list might be greatly extended.

In states where nearly every orchard malady is quite generally distributed quarantine laws may not be very important, but in a state like Colorado, occupying the unique position that it does, with a broad stretch of semi-barren plains as a barrier on the east, a high mountain range as another barrier, running north and south through its middle portion, and a stretch of barren moun-

tainous country on the west, and having its orchard sections in small mountain valleys isolated from one another, and with the handicap of a long and expensive haul to market, quarantine regulations to keep out insect pests and plant diseases become a paramount issue. While our soil, our climate and our ability to control the water supply to the land are all conditions greatly in our favor, our orchardists could hardly compete favorably with their Eastern brothers, who are situated in close proximity to the large centers of consumption, if they had to combat all the orchard pests and plant diseases that annoy the Eastern grower to make his crop unprofitable. When the writer came to this state even the codling moth was unknown in some of the large apple growing sections, and fire-blight, or pear blight, was unknown east of Denver and Pueblo. The moth was gradually introduced from point to point through the shipment of wormy apples into the state, and blight through the shipment of apple and pear trees bearing the germs of the blight organism (*bacillus amilivorus*).

But I want to tell you of the troubles we do not have. I shall mention only those that are known to occur in other parts of the United States. As they are enumerated you will be helped to understand how it is that our orchard lands can be so high in price and our orchardists still able to make good money on their investment, and also why the state entomologist and his inspectors are as strict as they are in taking measures to





Endorsed and adopted by the California Fruit Growers' Exchange, the largest body of fruit growers in the world. They have ordered one million Bolton Heaters

## Here are the Facts and Figures—now, which Heater do you want?

In a competitive test held at Roswell, New Mexico, January 2, 1911—

The Bolton Heater burned 8 hours on 5 quarts of oil; cost, delivered, 20 cents each.

The Hamilton Heater burned 4 hours and 25 minutes on 5 quarts of oil; cost at factory 45 cents each.

The Troutman Heater burned 5 hours and 35 minutes on 5 quarts of oil; cost at factory 22½ cents each.

At Winter Park, Florida, January 13, 1911, it took 112 Hamilton Heaters holding three gallons each to create as much heat as 100 Bolton Heaters holding only five quarts each.

These figures but tell a story that has become old by its repetition. The Bolton has so decisively defeated all heaters demonstrating against it that there can no longer be any doubt as to the relative merits of each.

The Bolton is built on strictly scientific principles and its features can be found on no other heater. That these principles are acknowledged correct is shown by our competitors abandoning their first types and offering heaters as near like the Bolton as they dare. Needless to say, they cannot approximate the results that the Bolton gives.

Do you think we could afford to come out openly and make statements like those in this advertisement if we were not prepared to make good? Are you one whom we may show? Put us to the test. P. S.—We can make immediate delivery. Get into touch with our nearest agent.

## Frost Prevention Co.

Balboa Building, San Francisco, California

Agents:

GEO. H. PARKER, 403 West D Street, Grants Pass, Oregon

E. B. McPHERSON, care Thompson Fruit Co., North Yakima, Washington



THERMOMETER COMPLETE \$22.50

prevent the introduction and spread of insect pests and plant diseases in the state of Colorado.

A total list of the insects injurious to fruit in this country, but which do not occur in Colorado, would be too lengthy. I wish to call attention to the following important ones only.

The scurvy bark louse, the white peach scale, the round-headed apple tree borer, the shot-hole borer, the apple maggot or railroad worm, the plum curculio, the canker worms, the American tent caterpillar, the forest tent caterpillar, the tussock moths, the brown-tail moth, the Gipsy moth, the elm leaf beetle, the rose chafer, the imported currant saw-fly, the grape-vine fidia, the grape phylloxera. The San Jose scale is known upon a few trees only in a single locality, and the oyster-shell scale has been found in one of the Denver parks and in a few instances upon shade trees only. It is not known as an orchard pest.

The apple curculio has been taken in one locality on the eastern slope only, the peach crown borer is known in three very limited districts only and the black peach aphid has only been known in a very few orchards.

When to this list of our worst orchard insects that are practically unknown in Colorado we add such diseases as apple scab, bitter rot, peach yellows, little peach and shot-hole fungus as unknown orchard troubles, it can readily be seen that we live in a sort of fruit growers' paradise, from which we must exclude, so long as possible, the insect pests and

## YOUR 1911 CROP Depends on Good Seed

# LILLY'S SEEDS

THIS COUPON BRINGS  
YOU 3 PACKAGES OF  
CHOICEST SEED

We want you to try Lilly's 1911 Seeds. Very fine stocks. We are willing to stand on their merits and prove to you that they are without doubt the very choicest varieties. Hence this offer. After you have tried them you will be convinced that Lilly's Seeds are best for the West. Hardy and true to name. We want you to get our catalog also; it tells the story of how the best in seeds is the cheapest.

1911 Catalog Sent Free on Request

THE CHAS. H. LILLY CO.  
SEATTLE, WASH.

Gentlemen:—  
Enclosed find 10c in stamps for which please send me your Trial Offer of 3 fine packages of "Northern Grown Seeds."

Name .....

P. O. ....

My dealer's name

is .....

plant diseases that we do not already have. If an insect or plant disease once gets a good start in a community it is rarely, if ever, exterminated from that section.

It is the wish of the writer that in the work of quarantine against the introduction and spread of insects and plant diseases that make fruit growing unprofitable exact justice might always be done to both the nurseryman and the orchardist. Occasionally the nurseryman will have trees condemned that should have been passed, while in other cases—and these are few—trees unfit for planting because of contagious maladies slip through the inspector's fingers to the injury of the grower.

There are two very serious nursery stock troubles that I wish to speak of briefly in closing. These are woolly aphis and crown gall. Last year our inspectors condemned and destroyed about 30,000 nursery trees that were affected by these troubles. Let me be very frank, and I am sure you will recognize the fairness of my position, when I say we must deal severely with both these troubles. An apple tree has a hard struggle, and then cannot do its best, when its roots become infected with woolly aphis after the tree has become well established in the soil, and the setback that the tree struggles against when these little parasites are planted with it is far greater and occasions a loss to the owner that is many times more than the first cost of the trees. And then there is little or no excuse that tree roots should be shipped with living woolly aphis upon them, for a fairly thorough fumigation with potassium cyanide gas will destroy them all.

Crown gall is not so easy to control. There are growers of nursery stock who do not hesitate to say that it occurs in all nurseries, no matter where they are located. This is undoubtedly true of all nurseries that ship in from distant points the trees, or a considerable portion of them, that they grow. The writer knows of two or three nurseries handling almost exclusively home-grown stuff in which it is almost impossible to find a tree with crown gall upon it. However this may be, this contagious malady, produced by a specific and minute organism (*pseudomonas tumefaciens*), is so severe in its effects upon fruit trees in the arid climate of Colorado that we must refuse to receive, in this state, any and all trees affected with it. In my judgment, if a considerable proportion of the trees in a shipment are infected with crown gall an inspector would be justified in condemning the entire bundle, for in such cases it is almost certain that there are trees in the lot that show no visible indication of the galls that really are inoculated with the organism, and will develop the disease after they are planted.

We do not wish to make the nurseryman any trouble or occasion him any loss, and we do wish to protect and foster our important and rather extensive fruit growing industry, and for these reasons I thought it best to state our position very frankly to this large body

of men, who are likely to be offering their goods for sale in Colorado, in order to avoid annoyance both on your part and ours. Our orchardists are usually ready to pay a good price for good, clean, healthy trees, but poor, diseased or infected trees are not wanted at any figure.

My wish is that the nurserymen and inspectors might pull together in harmony to give the fruit growers nothing but the best of clean, healthy trees, for then the profits of fruit growing would be increased, a larger acreage of trees would be planted and the benefits derived would be mutual.



## Planet Jr.

**Guaranteed Implements**  
Backed by over 35 years' experience of a practical farmer and manufacturer. You run no risk when you get a Planet Jr., and you will be surprised at how much more and better work you can do with less labor. Planet Jrs are light and strong, and last a life-time.

**No. 25 Planet Jr Combined Hill and Drill Seeder, Double-Wheel Hoe, Cultivator and Plow** opens the furrow, sows seed in drills or hills, covers, rolls, marks out next row in one operation. Also has perfect cultivating attachments.

**No. 16 Planet Jr Single Wheel-Hoe, Cultivator, Rake and Plow** is a most useful adjustable garden tool. Keeps ground in thorough condition all through season. The new pressed steel frame makes the tool practically indestructible.

**Write today for 1911 illustrated catalogue of all Planet Jr implements. Free and postpaid.**  
**S L Allen & Co**  
Box 1166v Philadelphia Pa



## Heavy Fence For Economy

**W**OVEN-WIRE FENCES must be heavy as they have to turn animals by sheer strength of the wire. A fence with barbs is protected from excessive pressure because the animal fears the barbs. Remove the barbs and the greatest strength of the animal is thrown upon the fence. Its wires must be larger and stronger. To have a long-life woven-wire fence the fence must be heavy.

## AMERICAN FENCE

is a thoroughly galvanized square mesh fence of weight, strength and durability. Large wires are used and the whole fabric is woven together with the American hinged joint (patented)—the most substantial and flexible union possible. Both wires are positively locked and firmly held against side slip and yet are free to act like a hinge in yielding to pressure, returning quickly to place without bending or injuring the metal.

**Dealers Everywhere**—Stocks of American Fence where farm supplies are sold. The Fence is shipped to these points in carload lots, thereby securing the cheapest transportation, and the saving in freight thus made enables it to be sold at the lowest prices. Look for the American Fence dealer and get the substantial advantages he is enabled to offer. He is there to serve the purchaser in person, offer the variety of selection and save the buyer money in many ways.

FRANK BAACKES, Vice President and General Sales Agent

## American Steel & Wire Company

Chicago

New York

Denver

San Francisco

Send for copy of "American Fence News," profusely illustrated, devoted to the interests of farmers and showing how fence may be employed to enhance the earning power of a farm. Furnished free upon application.

## Quality and Quantity Leave no Question as to Quotation

*On our complete line of*

**FRUIT TREES  
ORNAMENTAL TREES  
AND SHRUBBERY**

*Salesmen wanted*

**Capital City Nursery Company**  
Salem, Oregon

## To the Shrewd Business Man

A commercial orchard is a good income producer while you live, the best real estate agent you ever had when you are ready to sell, and a valuable asset to leave to your widow and orphans when you have reached the end of life's journey.

If an old reliable nursery is of any specific importance to the prospective planter, we kindly ask you to consider with us before buying your trees.

**Albany Nurseries**

*(Inc.)*

ALBANY, OREGON

## EXPERIMENTAL WORK IN WESTERN COLORADO

GEORGE P. WELLAN, at Annual State Horticultural Convention of Colorado, December 12, and 13, 1910

**A** MEETING of fruit growers for the discussion of problems relating to the conduct of their business would scarcely be complete without a discussion of the codling moth. While this is one of the oldest pests of our orchards, and one that nearly every entomologist who has ever worked in orchards has experimented upon, it is still one of the most serious. One season the apple grower meets with success in controlling it and prides himself of the fact that he has solved all the problems relating to its control, the next season he sprays in exactly the same manner, as far as it is possible for him to tell, as he did when he met with success, but finds that something is wrong some place, and he has failed in that which he felt so sure would bring the required results.

Experimental work is of little value unless the same experiments are conducted for a number of seasons, for there are too many factors which influence the results of an experiment that may be operative in one season and not in another to place much dependence upon the work of a single season. Without advancing any ideas that are entirely new or startling, it is the writer's purpose to submit data in this article gathered from the past three years of experimental work on the western slope of Colorado, which will go toward proving three propositions, which are: 1. The one-spray method can only be suc-

cessful in controlling codling moth in orchards where there is a natural scarcity of the pest throughout the season. 2. The specking of fruit cannot be prevented during a season of severe codling moth attack, no matter how much arsenate of lead is applied. 3. Thoroughness in applying the spray is a much more important factor than the quantity of arsenate of lead used per given volume of water.

Taking up the first proposition, by the one-spray method is meant one thorough spraying after the petals have dropped from the blossoms and before the calyx lobes have folded in, thus doing away with the so-called calyx cup, into which the first spray should be driven. Considerable has been written in recent years about the one-spray method, and while some have concluded that only one spray is necessary, and have failed to make any allowances for different seasons, or different sections, the more conservative have realized that such a method could not hold good in every locality and in every season. If this is true, how can we lay down any rules in regard to the number of times that an orchard should be sprayed in a season that will hold good at any time and in any place, no matter what the existing conditions may be? From the past three years' experimental work on the western slope, and from observations made in a great many orchards, this fact seems apparent: No rule in regard to the num-

**I**N the fight to preserve your fruit trees, be sure that your ammunition is right; when the crop is in danger, isn't the time to do any experimenting.

The Devoe Sprays are absolutely sure; if you are equipped with them, you are prepared for every emergency.

## Devoe Arsenate of Lead

Best insecticide on the market; pure, deadly, strong. It comes in pulp or dry form; equally effective; will keep indefinitely. It mixes perfectly and doesn't clog; is very adhesive; it's a perfect spray.

## C. T. Raynolds Paris Green

Does just what it is made for—kills potato bugs and all other insects. It's pure, and cheapest because it's pure—there's no waste—all counts.

## Devoe Lime and Sulphur Solution for San Jose Scale

Better than home-made; pure, strong—doesn't vary; can use cold. Not only a fungicide, but an excellent invigorator and fertilizer for fruit trees and vines.

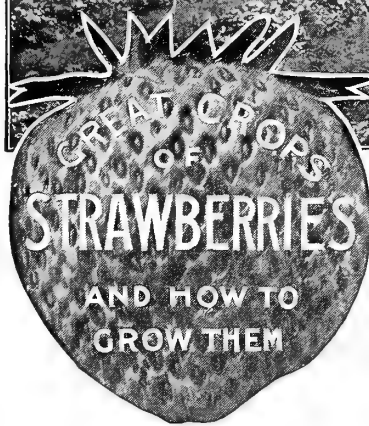
Be sure to use Devoe sprays. If your dealer does not keep them, write to us.

**DEVOE & RAYNOLDS COMPANY, 176 Randolph St., Chicago**

NEW YORK

KANSAS CITY

DENVER

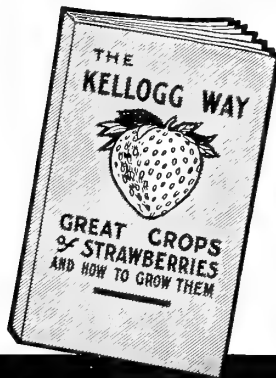


## Your Big Money is in Growing Strawberries

No matter where you live or what kind of soil you have, Kellogg's Way will more than double your profits growing Big Red Strawberries right between your rows of young fruit trees, if you have no other place. You can do it easily. Let us tell you how—we've got it all explained in a nut shell—in our handsomely illustrated 64-page book entitled

### "Great Crops of Strawberries and How to Grow Them"

**Our New Free Book Tells How. Send For It Today.**



It explains why the Kellogg Way of growing big crops of Strawberries is the sure and easy way. Tells how to prepare your soil; what varieties to set; how to care for the plants to get best results; how to market the fruit. Many fruit growers are now making a net profit of \$500 to \$800 per acre each year while waiting for young trees to come into bearing. Besides all this, the cultivating of the plants produces a healthy and more vigorous growth in the trees. Just what the trees require. Whether you have ever thought of growing strawberries or not, it is just the book that should be read by

### Every Fruit Grower and Farmer

What others are doing you can do right in your own soil. C. Harder, Twin Falls, Idaho, is making as high as \$1000 per acre each season growing strawberries between the rows of his young trees. Why don't you? It will more than double your income.

### Kellogg's Thoroughbred Plants

The only strain of plants that are propagated from mother plants of high fruiting power. That's why the Kellogg Strain of Thoroughbreds is so productive and bears such enormous crops of big red berries. They have a record of 15,000 quarts per acre. Large yields are often reported grown in young orchards. If you want to make some easy money, get our 1911 book. IT'S FREE.

**R. M. KELLOGG COMPANY,**

**Box 355**

**Three Rivers, Michigan**

## FRUIT GROWERS, YOUR ATTENTION!

Royal Anne, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

**MONTE VISTA NURSERY  
SCAPPOOSE, OREGON**

## EMMET NURSERY

THE LARGEST NURSERY PLANT IN IDAHO

OUR SPECIALTIES

**PEACHES—CHERRIES—DWARF PEARS**

A fine stock of all standard varieties of Apples, Fruit and Ornamental Trees, suited for the Northwest.

CHARLES P. HARTLEY, Proprietor

EMMETT, IDAHO

## RUSSELLVILLE NURSERY COMPANY

H. A. Lewis, Proprietor

Montavilla, Oregon

A progressive and up-to-date nursery. A full line of fruit and ornamental trees. Careful and reliable attention given to filling every order with first-class trees and plants. Satisfaction guaranteed. Nursery at Russellville, suburb of Portland. Take Montavilla car. Nursery one mile east of terminus. We still have a nice stock of the leading varieties of apple and cherry, and some nice peach trees. Send for prices.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

ber of sprays that should be applied in any one season can be laid down that will not be subject to seasonal and locality variations. To illustrate this point a comparison of results attained in last year's experiment is made with results attained in this year's experiment.

It will be remembered by many of you, that last year it was possible to control codling moth very effectively in many localities of the western slope with only one spray. This year it has been found necessary in those same localities to spray three or more times, and in most cases with poorer success than last season. A striking example of this was noted in the locality where the experimental work was done last year. In that particular locality no one, to my knowledge, sprayed more than once, and practically everyone was so successful that from 90% to 99% of their fruit was free from worms or worm specks. The experimental trees were sprayed only once, but very thoroughly, and an average, estimated from actual count of all apples from nine trees, of 95½% of



the fruit free from worms or worm-specks was attained. With an average such as this any further spraying during the season would have been a ruthless waste of time and money. The fact that so large a percentage of the fruit was good could not be attributed to the spraying had there been no comparison

of the sprayed with unsprayed trees. In this block there were thirteen unsprayed trees, all Ben Davis, the same variety as those sprayed, and the average percentage of sound fruit, determined by actual count of all apples from a number of trees, was 52, so that there was no doubting the fact that only one spray had resulted in a saving of 43½% of the fruit. It is well to note here that the wormy fruit of the check trees, while it was spoiled for the first grade pack, was not excessively wormy, as it would have been in a season of severe codling moth attack, most of the apples having only one worm-hole in them. The experimental orchard, along with practically all others in that section, was much more wormy this season, with from two to five sprayings instead of one, due partly no doubt to the light crop of apples, but due principally to the great abundance of worms which seemed to find everything favorable to their development.

This year's experiment was conducted in a locality where there was an average crop of fruit and an abundance of worms. It was found to be absolutely impossible

to keep down the worms in this orchard with only one spraying, and where last season 95½% of the fruit was saved with one spray, this season 22½% of the fruit from one Ben Davis tree was free from worms, and much of it was also worm-specked. In this orchard one Ben Davis tree left unsprayed had 17.4% of its fruit worm free. Thus the benefit of the one spray was only 5¼%, in all probability because of the fact that the percentage of the worms which enter the side of the fruit, usually estimated at about 25, was an exceedingly large number, and there was nothing to keep them from going in. There was no doubt but that the arsenate of lead was good, and the calyx spray effective, for out of 2,362 apples from the tree sprayed once only 17 were wormy in the calyx, while out of a total number of 1,366 apples from the unsprayed trees 679 were wormy in the calyx. The best results attained in this orchard were with the use of four sprays, which kept 83% of the fruit worm free. Much of it was, however, specked.

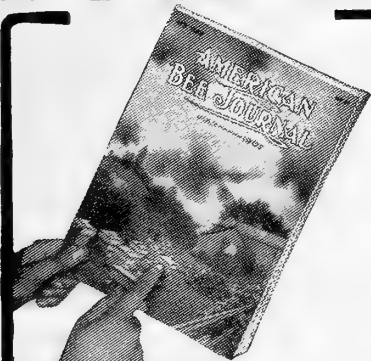
This brings us to the second proposition: "The specking of fruit cannot be

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread

# FREE!



**COPY of the  
Best BEE-PAPER**

We want every live bee-keeper to know how much help there is in the "old reliable" American Bee Journal. It is now the brightest, cleanest, newsiest monthly bee-paper published. We want everyone interested in bees and bee-keeping—beginners or experts—to write for a free copy of the

**AMERICAN BEE JOURNAL**

Then you will appreciate what a big help it will be to you in keeping bees. Experienced talks by expert bee-men; answers to questions about everything pertaining to bees; special department for women who keep bees; a paper that you'll learn to look for every month.

**AMERICAN BEE JOURNAL**  
Chicago, Illinois

## Weed Seeds Grow!

That this is true every farmer knows, but what YOU want is the BEST SEEDS THAT CAN BE GROWN! Such are the only seeds produced and sold by BURPEE, Philadelphia. Shall we mail you a copy of our Complete New Catalog for 1911? It is a Safe Guide to Success in Gardening and is free to all who realize that in seeds "the Best is the cheapest." Write to-day! Address

**W. Atlee Burpee & Co.,** Burpee Buildings, Philadelphia,  
The Largest Mail-Order Seed House in the World.

## CHICKS PROPERLY HATCHED

in a

## "MANDY LEE"

INCUBATOR

**Do NOT Die**

in the Brooding



1911 "Mandy Lee"

The Perfect Incubator

**THIS** is a fact—a positive—a proven fact—and a vital one to poultrymen. The reasons are plain and sure as the fact.

Better investigate the "Mandy Lee" right now and send in your order early, for no other incubator will satisfy you when you know the points of superiority of the "Mandy Lee." **The factory could not fill all orders last season.**

**BE IN TIME**

Complete Catalog No. 202 and Lee Booklets free.



**PORTLAND SEED COMPANY**

WESTERN AGENTS

**PORTLAND, OREGON**

**Life-giving Oxygen is supplied freely at the egg-level without losing the moisture** so necessary at all times and imperative when the chicks are coming out. **No other incubator on the market gives this important advantage.**

**Heat—Moisture—Ventilation**

The three essential factors in artificial incubation are controlled with mechanical accuracy by the original, exclusive system of ventilation that places the **NEW**

**1911 Mandy Lee**

in a class of its own

Alone and above all Competitors

prevented during a season of severe codling moth attack, no matter how much arsenate of lead is applied." The general complaint throughout the fruit sections the past season was that even though the worms failed to gain an entrance for any distance into the fruit they succeeded in eating enough to leave specks. The specking of fruit is caused almost entirely by worms that have been killed by the poison, but which fed for some little time after taking the fatal dose. For my part I cannot see how specking of fruit can be prevented during a season when codling moth is abundant. The larvae cannot be killed unless they get some of the poison into their systems, and in order to get some of the poison they must feed upon a portion of the apple covered with the poison, or on the poison itself, with none of the apple. It is, of course, possible that some worms are killed by eating poison from the skin of the apple before it is pierced, but as arsenate of lead is a somewhat slow acting poison and does not kill immediately upon being taken into the body of the insect, in most cases a worm will feed for some time underneath the skin of the apple after taking the fatal dose, and as a consequence we have an apple that is specked, is not strictly fancy and cannot be packed with our best grade of fruit. Sprays applied late in the season, while they may keep the worms from getting in and totally destroying the fruit, bear a direct relation to the number of worm-specks upon the fruit. This

### Greider's Fine Catalog

of pure bred poultry, for 1911, over 200 pages, 57 large colored pictures of fowls. Calendar for each month. Illustrations, descriptions, photos, incubators, brooders, information and all details concerning the business, where and how to buy fine poultry, eggs for hatching, supplies, etc., at the lowest cost, in fact, the greatest poultry catalog ever published. Send 15c for this handsome book.

B. GREIDER, Box 72, Rheems, Pa.



## BEEKEEPING

### ITS PLEASURES AND PROFITS

Is the theme of that excellent and handsomely illustrated magazine, GLEANINGS IN BEE CULTURE. We send it for six months on trial for twenty-five cents, and also send free a 64-page book on bees and our bee supply catalogue to all who name this paper. THE A. I. ROOT CO., Box 83, Medina, Ohio.

## POULTRY AND FRUIT



One man made over \$18,000 last year—many others make a nice fortune from a few hens and a small piece of ground. But you must know how. American Hen Magazine tells how. It gives the secrets from A to Z in plain language. Subscription price 25 cents a year. Descriptive literature free.

American Hen Magazine Council Bluffs, Iowa

### RASPBERRY, STRAWBERRY AND BLACKBERRY PLANTS BLACKBERRY ROOT CUTTINGS AND FRUIT TREES

At half price. Let us send you our Half Price Catalogue. It is free. All stock No. 1.

### GRAY'S NURSERY

Dept. "B" Pekin, Indiana

point was nicely illustrated in this season's experiment by two Ben Davis trees, one sprayed only once and the other four times. The tree that was sprayed only once yielded a total number of 2,362 apples, 144 of which were specked and 1,813 wormy. The tree that was sprayed four times yielded a total of 1,282 apples, 618 of which were specked and 219 wormy. Examples of this kind could be multiplied, but it is not necessary to do so in this paper.

The fruit grower realizes that the specking of apples is unavoidable during certain seasons of severe codling moth attack, and has tried to overcome the difficulty by the use of a very strong spray of arsenate of lead or other arsenate. While it would seem that such a method might result in some good, careful experimental work and careful investigations in many orchards failed to indicate in the least that a strong spray is a solution of the difficulty, but did indi-

Book  
46-B



## Improved Machinery and Methods Increase Profits

Any or all of these booklets sent FREE  
Please ask for the books by number

### ALFALFA

Its Seeding, Culture and Curing, by one of the highest authorities in Kansas, the greatest Alfalfa State, is full of practical information about this new and important crop.

Get posted on this interesting subject.

### A BRAND NEW ORCHARD HARROW

The DEERE MODEL R. Orchard Harrow is making a hit with Orchardists everywhere.

Made in 4, 5 and 6-foot sizes, with or without extension frame; extreme width extended 12 feet. Shields for protecting low growing branches; double angling levers give instant control of disc gangs.

Very readily adjustable from in-throw to out-throw or visa versa. This harrow is built especially to meet the conditions in the Northwest.

You'll like the work of this harrow.

### DISC HARROWS

The Disc Harrow is the most necessary tool on the farm today. The advantages of thorough discing are just beginning to be understood.

The DEERE MODEL B. Disc Harrows control the gangs and force them into the ground by a spring pressure, thereby securing the most even and thorough penetration and cultivation.

Whether you buy a disc harrow or not this year, it will pay you to read up all the new features of the DEERE line of harrows and the MODEL B. in particular.

REMEMBER, it is the only spring-pressure harrow made and spring-pressure control insures more perfect work.

### BETTER HAY

If you have ten or more acres of hay you will be interested in the New Deere Hay Loader.

The Loader that lasts a lifetime; that has absolutely the lightest draft of its width; delivers the hay at the highest point; rakes absolutely clean without gathering trash; will handle the hay in swaths, windrows of any size, or bunches.

The New Deere couples automatically and unhitches from the load and has many other exclusive and valuable features. ALL IN THE BOOK.

### FARMERS' POCKET LEDGER

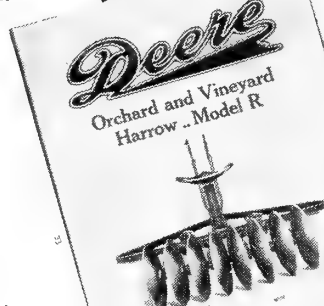
The Farmers' Pocket Ledger is a new, durable and handsome memorandum book which contains lots of practical information and has plenty of room for recording important transactions. The most popular little book of its kind.

Please ask for books by number

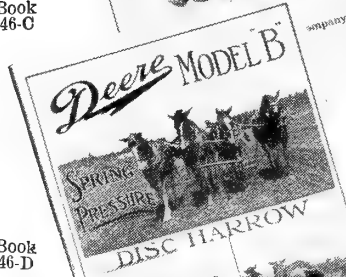
Address

DEERE & MANSUR CO.  
Moline, Illinois

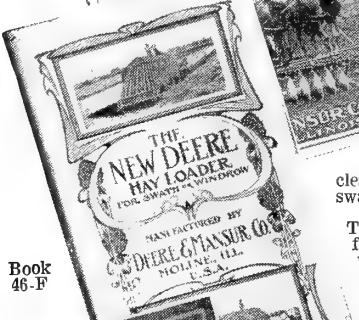
Book  
46-C



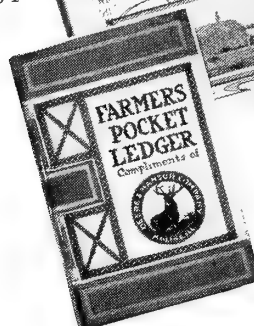
Book  
46-D



Book  
46-E



Book  
46-F



cate that in the words of the third proposition laid down: "Thoroughness in applying the spray is a much more important factor than the quantity of arsenate of lead per given volume of water." It matters not how great an amount of arsenate of lead is used in 100 gallons of water if it is not put in the right place the best results cannot be expected from it. If only three-fourths of the calyx cups are filled during the time of the first spray, it makes no difference how strong the arsenate of lead was used, the remaining one-fourth will probably allow the entrance of enough worms to practically undo all the good that was accomplished by the first spray. It is true also in applying the later sprays that often not nearly all of the apples on a tree will be touched with the liquid, and of many of those that are touched there will be only a small portion of them coated with the spray. The

orchardist meets with a serious difficulty when he attempts to coat any good sized apple with a film of arsenate of lead applied in the form of a spray. Especially is this true of certain varieties, such as Ben Davis, Gano and Jonathan, but the better he succeeds in doing this the better are his chances for success, and there is no excuse in applying these sprays for not exercising the greatest possible care, so that the greatest good may result.

It has been proven that the excessive use of arsenical sprays endangers the lives of our orchard trees, so that certain precautions should be used for their protection. As it is absolutely necessary to use a large amount of liquid to do thorough spraying, precautionary measures should consist principally in the use of the least possible amount of arsenate of lead per given volume of water that will do effective work, and in guarding against needless spraying of the trunks and larger limbs. Two pounds of arsenate of lead mixed with 100 gallons of water has been used with perfect success in many cases, and while it is probable that any of the standard brands will successfully control codling moth when used at that strength, in order to be on the safe side not less than three pounds was advised last season, and the majority of the orchardists used it stronger. Wherever only three pounds were used, and thoroughly applied, the spray proved to be in every way as effective as where the higher strengths were used.

The fact that later sprays must be

applied in a season when codling moth is abundant, and their use can only result in keeping the worms from entering the apples and not in preventing worm-specks, makes it urgent that all methods at the orchardist's disposal be brought into use in the fight against this pest. The question resolves itself, in this valley, into one of decreasing the present abundance of worms, so that less spraying will be necessary. At present we may have to spray often and very carefully, but along with that spraying should go other things that will aid materially in the work.

From the time when apples are picked in the fall until the time when the first moths begin to appear in the spring little attention is given to the matter of codling moth control by the average apple grower. It is, of course, true that codling moth could not be decreased by any method that might be used during this period to such an extent that spraying would not be necessary, but it is also true that work of such a helpful nature can be done that codling moth can be more effectively controlled than by spraying alone. The work during this season, which should not be neglected by any orchardist having codling moths in his orchard, consists in killing all larvae that can be found wintering on the trees or thereabout. In order to do this it is necessary to scrape off with trowel, knife or other instrument all the loose bark which always serves as a hiding place for multitudes of larvae. The larger crotches, cracks, or any other places

## ORCHARDISTS' SUPPLY CO.

W. M. Grisinger, Manager  
301 Newhouse Building, Salt Lake, Utah  
January 15, 1911.

We offer for spring delivery a splendid stock of standard commercial sorts of one-year apples, peaches, sweet cherries, etc., at wholesale and retail.

## DO NOT ARRANGE FOR THE MARKETING OF YOUR NEXT SEASON'S CROP, UNTIL YOU LEARN ALL ABOUT THE Produce Reporter Company AND ITS SYSTEM

It is not a selling agency, but it equips you to do your own business at the minimum expense and with the maximum safety.

No matter even if you should place your crop through some marketing agency, you ought to keep posted on that agency or that "distributor," and you should know to whom your goods go, and insist upon their being placed with or sold to reliable traders. That is a duty that you owe yourself.

It is impossible in the limited space of this advertisement to go into your great problem of successful marketing, but your investigation of this subject will not be complete unless you get the printed matter of this organization. It will cost you but a moment of your time and two cents postage to ask for it, and it may make or save you several hundred dollars next season.

## Produce Reporter Company

34 South Clark Street

Chicago, Illinois

## For Orchard Cultivation This Harrow Has Made Good

The "ACME" is the only implement you need to follow the plow in any kind of ground. It works either irrigated or dry farms. The sharp, sloping coulters on the "ACME" cut through the sod or stubble turned under by the plow, and do not drag it to the surface. The "ACME" is a perfect weed exterminator and mulcher, and will keep down weed growths in all orchards.

### ACME Pulverizing Harrow, Clod Crusher and Leveler

is also the best Harrow for general farming, and for fitting soil for grains, alfalfa, etc., because the coulters work every inch of the soil, cutting through to the under soil, which other harrows leave lumpy and full of air spaces, pulverizes and then compacts this under soil and leaves the top soil loose. Soil harrowed with an "ACME" will attract and conserve all the moisture for the benefit of the growing crops. Made entirely of steel and iron. In sizes to suit every one—3 to 17½ feet wide. Each and every part guaranteed.

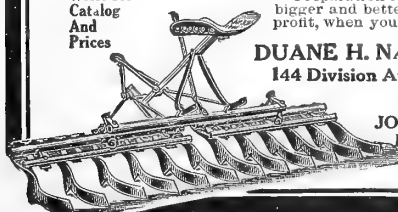
**Keeps Down Weed Growths—Produces Ideal Surface Mulch—No Tree Roots Injured by The Coulters—Branches Not Disturbed by Horses.**

Write for  
Catalog  
And  
Prices

Send for our combined catalog and booklet "Preparation of The Soil," which will mean bigger and better growth for you and more profit, when you have read it.

**DUANE H. NASH, Incorporated**  
144 Division Ave., Millington, N. J.

GENERAL AGENTS:  
**JOHN DEERE PLOW CO.**  
Portland, Ore., Spokane, Wash.



# Increase Your Profits!

By  
Using

## FANCY LABELS

on Your  
Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*

### Schmidt Lithograph Co.

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

affording shelter, are always favorite places for hibernation. All these should be carefully searched and the larval contents destroyed. The practice of banding trees with burlap before the larvae begin to leave the apples early in the summer and destroying those which gather beneath for pupation every ten days is a valuable one, and particularly so when the trunks of trees have been made smooth by scraping off all loose bark. Bands for this purpose do not need to be made from burlap, but most any kind of cloth with a good nap will answer the purpose. Such bands should

be at least five inches wide and folded so as to make two or three thicknesses of the cloth. The darker it is beneath a band the more liable are the larvae to stay there.

Besides the use of these two methods whereby great good can be accomplished, there is a third one, which is always valuable, and that is the picking off and destruction of wormy apples as they appear early in the season. This can be accomplished along with the thinning operation which most orchardists practice, and which is no doubt of great practical value.

While these three methods are only aids in controlling codling moth, and the use of one or all of them should not be expected to take the place of spraying, still they are too important to neglect when good crops of apples are at stake because of worms. It is safe to say that if every orchardist would cease depending entirely upon spraying and would pay careful attention to these other methods also that the present amount of codling moth could be reduced to the minimum.



THE Stark Bros. Nursery and Orchard Company to Thomas Kenny, Sumner, New Mexico: Replying to your favor of the 30th inst. asking for instructions as to the trimming of your apple orchard trees, one year planted, we would suggest that the Stark Year Book will give you considerable information. We can furnish a very good booklet on pruning. There are many such works, but in our judgment, for Western planters particularly one of the safest and best guides right up to date from month to month is the "Better Fruit" magazine of Hood River, Oregon. The December number gives in detail an illustrated article which gives you just the desired information, showing the apple orchard from the time of planting the one-

year tree to the required treatment from year to year up to bearing age, season by season. Editor Shepard is a practical and experienced horticulturist, and as a publisher he is an idealist, and any number of "Better Fruit" is well worth more than the subscription price. Not only does it tell you about orchard pruning, but spraying, grading, the marketing of fruit and all other subjects of kindred interest. We would not only congratulate "Better Fruit" on its great success, but the orchard industry everywhere is a subject of congratulation.

## Bean Magic Spray Pump



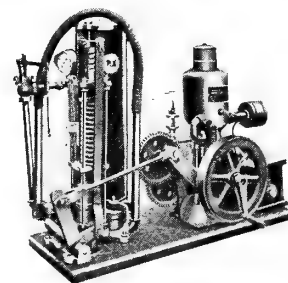
The first hand sprayer that can be maintained at a constant pressure of 100 pounds. This is made possible by the Bean Patent Spring, which reduces the labor a full third.

With a Bean Magic it is not hard to find an operator—men who prefer to operate the pump rather than do the spraying.

Send for our new catalog. It's free.

**BEAN SPRAY PUMP CO.**

213 W. Julian Street, San Jose, California  
Also Cleveland, Ohio



## BEAN PONY SPRAYER

A Very Light Outfit  
Tested for High Pressure

This is the Bean Pony No. 143—ready to mount on your own truck. It has a capacity of over 3 gallons a minute—twice what a man can pump. Same advantages as our larger outfits with reduced weight and capacity. The ideal outfit for fruit growers, farmers and gardeners who have heretofore been limited to hand pumps.

Send for our free illustrated catalog. Better still, go to your nearest Bean dealer and see the Pony at once.

**BEAN SPRAY PUMP CO.**

213 W. Julian Street, San Jose, California  
Also Cleveland, Ohio



## Hawkeye Tree Protectors



Give dollars worth of protection at a fraction of a cent cost. Don't take a chance with your young trees. One rabbit will kill many in a single night. Protect yours with Hawkeye, the protector that rabbits, mice and other tree gnawers can't gnaw through—the protector that protects against cut worms and prevents trees becoming skinned or bruised by cultivator or lawn mower.

Hawkeye tree protectors are elm veneer chemically treated. They are easily applied to the trees and will last until the tree is beyond the need of protection.

The value of one tree is more than all the Hawkeye tree protectors you need will cost you. Send us your order before some of your trees are killed—you'll regret it if you wait until too late.

Write for prices today to

### Burlington Basket Company

118 Main Street, Burlington, Iowa

Or State Agents:

G. M. Westland, Wenatchee, Wash.  
Fair Oaks Nursery Co., Traverse City, Mich.  
Humphrey Nurseries, Humphrey, Nebr.  
The Welch Nursery Co., Madison, Ala.

HIGHEST  
QUALITY



## SEEDS

Plants, Bulbs, Fruit, Shade and Ornamental Trees, Shrubs and Roses. Gold Fish, Canary Birds; Sprays and Spray Pumps; Fertilizers, Tools, Poultry Food and Supplies. 20 years on this Coast enables us to offer only the most Desirable Stocks and valuable information.

104 Page Catalog Free.  
**ROUTLEDGE SEED  
& FLORAL CO.**  
Portland, Oregon

## CONTROL OF THE CODLING MOTH IN CALIFORNIA

BY W. H. VOLCK, HORTICULTURAL COMMISSIONER, WATSONVILLE, CALIFORNIA

THE most important insect pest of the apple is conceded to be the codling moth. An estimated damage of 40% is held by the best authorities to be an average for the entire world. Under California conditions the normal loss due to this insect exceeds even 40%. The warmer interior valleys may easily go as high as 90%, while the coast regions vary from 15% to 60%.

The pear is also much damaged by this insect, with the exception of a few localities along the coast, where, for some reasons not yet fully determined, this fruit is but little attacked.

The value of the apple and pear crop of California would be about \$5,000,000 if all were sound fruit. The total cullage from all causes will average about 20%. This gives a \$4,000,000 market value for the remainder.

Now, if the codling moth were not controlled by spraying an additional 20%

of loss would have to be added, which is \$1,000,000. To save this \$1,000,000 California orchardists use about \$25,000 worth of arsenate of lead, and it costs something like \$30,000 to put it on the trees. This makes the total cost of spraying for the codling moth some \$55,000.

Then it is evident that the rather large sum of \$945,000 is saved to the growers of the state by the use of arsenical sprays. This is a very good showing, but the loss from worms is still too high. The saving of an additional 10% of the fruit would mean the increase of the profits to be about \$500,000.

The codling moth problem, from the farmers' standpoint, cannot be regarded as satisfactorily solved until he is able to save this additional \$500,000.

A practical entomologist could take any apple or pear orchard in the state and reduce the worm loss to less than 3%. This reduction in worms would be accompanied by the lessening of the total number of culls from other causes, for insects other than the codling moth are frequently responsible for these

## Seeds

THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street

J. J. BUTZER

Portland, Oregon

Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

## V "Diamond Quality" Vegetable Seeds for 1911



Our complete New Seed Annual and Planter's Guide specially prepared for Northwestern growers—fully illustrating and presenting newest, most profitable varieties for market-man or home garden is **NOW READY FOR YOU**

The One Catalog for the Careful Buyer

Latest and Best Equipments for the  
**Farmer, Orchardist  
Poultryman and Beekeeper**

Our Diamond Trade Mark is a guarantee of Quality, Satisfaction and Full Value, backed by twenty-five years of success right here in the Pacific Northwest. Our Catalogs are Complete Buyer's Guides. **Free on Request.**

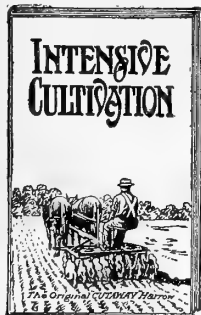
Ask for our Catalog No. 200

**Portland Seed Co.**  
Portland, :: Oregon



## THE NEW FARMER

The "rube" has been succeeded by the "agriculturist." There's as much difference between the "rube" and "agriculturist" as between corn and cucumbers. The modern farmer is a business man, a student, and a progressionist. The result is a great change in cultural methods.



Mould-board plows and drag cultivators are being replaced by "Cutaway" tools. Farmers now realize that cultivation is not merely a matter of softening the ground. Thorough, frequent cultivation stirs the soil, lets in air and sunshine and new life, killing foul vegetation. "Cutaway" tools effect perfect sub-soil connections; save time and labor; increase crops 25% to 50%.

Send postal to-day to The Cutaway Harrow Co., Higganum, Conn., for new booklet "INTENSIVE CULTIVATION." It's free. Adv.

Prize orchard in Piedmont, Virginia—prize-winning fruit farm, 140 acres. Twelve hundred feet elevation, running streams, truck land, woodland pasture; well equipped with buildings; 16 acres 20-year prize-winning Winesap, 30 acres four-year York Imperial, 3,000 four-year-old Elberta; cheap freight, one day's shipment to twenty million consumers; near station and city; good neighbors and beautiful scenery, pure air; a dividend producer and healthful home. For sale in whole or in part by owner

## G. W. MURRELL

Hotel Carroll Lynchburg, Virginia

## A CHANCE OF A LIFETIME

For sale, splendid 95-acre 6-year-old apple orchard, Grande Ronde Valley, one-half mile from town on railroad. No better soil or fruit district in Oregon. Orchard of Rome Beauty, Yellow Newtown, York Imperial and Gano trees, which are in fine condition; no insect pests. Price \$50,000, and can be practically paid for from the crops grown on orchard. There is a fortune here for the right man. This is no wildcat fruit venture, but a solid business proposition that on a very conservative estimate will double in value inside of five years. Future absence from state makes sale necessary.

## W. A. LAIDLAW

607 Commercial Block, Portland, Oregon

## FOR SALE

Choice ten-acre tracts Okanogan fruit land. First-class upper bench, near government canal; 1,280 feet altitude. Well water in gravel, thirty feet, pure. Planted to yearling apple trees; best red winter commercial varieties; also tracts not planted. Ready to irrigate. Great Northern Railroad now building in Okanogan Valley. Prices and terms right.

### W. E. KIRKPATRICK

Epley, Wash. Okanogan County

### MANAGER WANTED

For Fruit Growers' Union. Address, giving experience, age and references,

### LEWISTON-CLARKSTON IMPROVEMENT CO.

CLARKSTON, WASHINGTON

## We Raise the Big Red Apples

I have land for sale in the beautiful Mosier Hills, just six miles east of the town of Hood River, Oregon.

I have the exclusive sale of the East Hood River Land Company's lands.

Some choice tracts in one to three-year-old orchard.

I have had fifteen years' experience in the Mosier district and I have on my list the best buys in this district.

## GEO. CHAMBERLAIN

Mosier, Oregon

culls, and are largely controlled with arsenate of lead.

It would cost more to spray an orchard in such a manner as to insure complete control of the worms, but the proportionate increase in cost would certainly be less than the value of the advantage gained.

It is unfortunate that our fruit growers are not all practical entomologists, and capable of doing this kind of work. Even if the fruit growers were willing to follow closely and conscientiously the advice of standard authorities the situation would be much improved.

The codling moth problem has been before the apple and pear growers so long that practically every man has his own ideas on the subject of the best methods for control. This makes it difficult to cause the great majority of the growers to follow instructions closely.

The problem of codling moth control cannot, then, be considered solved until a means is found whereby the growers can be induced to accept a uniform and effective method of spraying.

Entomologists are spending considerable time on the codling moth problem, largely with this end in view. The progress in recent years has been great, and the results have been correspondingly improved. These studies of the codling moth problem have embraced a very wide range of subjects.

The practical entomological side of the question consisted in working out the life history of the insect. This has now been done in many localities, and when the average results are compared it should give a very accurate knowledge of this feature of the problem.

The codling moth is largely influenced by climatic conditions, and prefers warm weather; that is, the greatest developments take place in the warmer sections of the country. As the temperature increases the rate of growth of the insect also becomes more rapid.

The most important facts in the history are that the winter season is passed by the adult larvae in their cocoon. With the approach of spring the larvae transforms into pupae. The pupae stage is rather short, being from ten to fifteen days, when the adult moths emerge.

This part of the life history was comparatively easy to work out, and has long been well understood. What the moth did after emerging was not so easy to determine, and many erroneous ideas have prevailed with regard to the adult stage of the insect.

It was long supposed that the moths proceeded at once to lay eggs in the calyx cup of the apple. This was the

## Virginia Fruit Property

8000 TREES

303 ACRES OF LAND

Located 3½ miles from railroad station, in Albemarle County; telephone, mail delivered daily; 5,000 peach trees (mostly Elbertas) and 3,000 apple trees; age of trees, from 2 to 4 years. The owner received \$2,500 from the fruit crop last year, and there are only 500 trees in full bearing; additional cleared land enough to plant out 10,000 more trees; fair 7-room house. This is one of the best fruit sections of the state, and the peaches from this orchard brought 25c more per crate on the Northern markets than any other orchard in the entire community. On terms given below, the fruit crop will in four years more than pay for the property. Price \$11,000; terms \$2,500 cash, balance on five years' time. Write us at once.

## VENABLE & FORD

LYNCHBURG, VIRGINIA



# N&W VIRGINIA FRUIT LANDS



## \$15 to \$50 per acre

Will buy land in the Beautiful Shenandoah Valley that will grow better fruit than can be grown on \$100 to \$200 land elsewhere.

**Close Markets and Low Freight Rates**

Give us a great advantage. Fast freight shipments reach New York in 24 hours. Rate 10 cents per box on apples.

**The Virginia Apple Orchard is a Money Maker**

You can grow apples here at lower cost because nature provides abundant rainfall, and our mild climate, rich soil, cold mountain water, good schools, good roads and best social environment make life very attractive to the newcomer.

Virginia harvested a \$3,000,000 apple crop in 1910. We have high grade apple lands in the Shenandoah Valley, near railroad and good towns, at \$15 per acre and up in small tracts. Large boundaries as low as \$10 per acre.

Write for attractive booklet, complete list of properties and copy of our Homeseekers' Guide.

F. H. LA BAUME, AGRICULTURAL AGENT NORFOLK & WESTERN RAILWAY, ROANOKE, VIRGINIA

prevailing notion up till the beginning of the present decade.

In fact the eggs are probably never laid in the calyx cup, and seldom, if ever, upon the young apples at any other point. The character of the codling moth egg is such that it requires a very smooth surface upon which to be deposited.

In the early spring about the only smooth surface is the upper side of the young leaves. Then the majority of the early eggs are necessarily laid on the leaves. As the season advances the under surface of the foliage becomes suitable for egg laying.

About this time the hairs disappear from the rind of the fruit, and we begin to find codling moth eggs on the apples.

These eggs hatch in from eight to fifteen days, according to climatic conditions, and the young worms begin to

feed in a short time after hatching. It was long supposed that the codling worms ate nothing but the pulp of the apple or the seeds.

Recently it has been learned that the foliage and other portions of the tree may be attacked by the young worms before they have started into the apple. Unquestionably the codling worm seeks the apple as the most suitable food for its development.

The instinct to hunt protection is also strong, and the young worms apparently desire to get out of sight as soon as possible. The calyx cup of the apple offers quite thorough protection, which is probably the reason why a large percentage of the first generation of worms enter the fruit at this point.

Under some climatic conditions this tendency to enter the calyx cup is so pronounced as to have led the earlier observers to believe that the egg was laid in the blossom. The tendency to enter at the calyx varies considerably with the locality. In some sections it is as high as 80%.

The coast districts of California are examples of localities where the calyx cup entries are likely to be less numerous, while the interior districts usually show the largest percentage of entries at the blossom end.

If the young worms do not enter at the calyx they usually go in between two apples, or at the point where a leaf is in close contact with the fruit.

After penetrating the fruit rind the young worms feed just underneath the surface for a few days, and then start a more or less direct burrow to the core. The feeding in the vicinity of the core frequently results in cutting off the sap-conducting vessels of the fruit, and so stopping its development. For this reason the fruit that has become wormy early in the season usually falls in July or August.

The time required for the development of the codling moth larvae varies according to the prevailing temperature, and may be as short as fifteen days or as long as thirty to thirty-five days. The climatic conditions of Pajaro Valley are such that the long period of development is much more frequent than the shorter.

When the worms have matured they leave the apple and seek a suitable place in which to transform into adult insects. Many will be found located under the rough bark of the trees, and any other protection near the tree trunk.

A strip of cloth tied around the trunk will frequently catch a number of worms. This fact was noted by some of the early observers, and was supposed to offer a means of controlling the insect, but the most careful watching of these bands failed to materially lessen the loss from worms. This was found to be due to the fact that only a portion of the moths were caught in this way.

The larvae of the first generation do not remain in the cocoons, but soon transform into adult insects, the period requiring from ten to fifteen days. The moths which emerge are known as moths of the second generation. They

lay eggs in much the same manner as the first generation moths, but as the fruit rind is thoroughly smooth, practically all the eggs are deposited on the apples.

Curiously, second generation worms are not so particular about seeking pro-

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

**HOOD RIVER  
MILLING CO.**

C. M. SHAW

ROY F. DEAN

*Dean & Shaw*

**Electrical Supplies and Fixtures  
Scientific Electrical Construction**

Home Phone 3 Hood River, Oregon

## John B. Cancelmo

WHOLESALE DEALER IN

**FANCY  
BOX APPLES**

127 Dock Street

PHILADELPHIA, PA.

## STORAGE

Ship your Furniture to us  
to be stored  
until you are located

**Transfer & Livery Co.**

Hood River, Oregon

## D. McDONALD

Hood River, Oregon

Headquarters for

FARMING AND ORCHARD

**TOOLS**

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best

J. M. Schmeltzer, Secretary

**Hood River Abstract Company**

Hood River, Oregon

**ABSTRACTS INSURANCE  
CONVEYANCING**

## Rogue River Fruit and Produce Association

C. W. WILMEROTH, Manager

Main Office, Medford, Oregon

We will distribute the entire output of the  
Rogue River Valley—The world's most famous  
pears—Our Spitzenbergs won first prize  
in 1909—We use the Revised Economy Code

Loading Stations

Ashland, Medford, Grants Pass, Eagle Point,  
Gold Hill, Central Point, Talent, Woodville,  
Phoenix, Voorhies, Merlin and Jacksonville.

## WHAT \$100 WILL DO FOR YOU IN TEXAS

It will buy one gold bond bearing eight per cent interest and \$50 stock in new company and one town lot in Aldine, near Houston, the greatest city in the Southwest. Terms either cash or monthly. Full particulars free. Address E. C. Robertson, general sales manager, 501 Kiam building, Houston, Texas.

## S. E. Bartmess

**UNDERTAKER AND  
LICENSED EMBALMER**

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

**Hood River, Oregon**

tection as those of the first brood, and we find them entering the apple in exposed as well as protected places. The worms of the second generation require about the same time to develop as those of the first.

Second generation worms practically all have the wintering-over instinct, so they seek well protected places after emerging from the fruit, and there remain until the following spring.

The facts in this life history have been utilized by entomologists to determine the correct method of applying sprays. As a large number of the first generation worms enter at the blossom end it is apparent that a deposit of poison at this point should be very effective. In order to get spray material into the calyx cup it is necessary to do the spraying before the cup closes.

The ideal time for this spraying is now conceded to be when about 80% of the blossoms have fallen. If the calyx cup spraying is not applied it is then necessary to protect the outer surface of the fruit, and also the foliage, at a time

just previous to the appearance of the first worm.

The spraying methods of the various localities will vary according to the regularity with which the moths develop; that is, if the insects all emerge and lay eggs at about the same time it is possible to control them with one application, but if this emergence is drawn out through a considerable period some extra sprayings will be necessary.

The coast districts of California offer an example of the long drawn out emergence of the first brood. The calyx cups of the apple close about the middle of April, but the first worms may not appear until May is well advanced, and usually there is a considerable hatching in the early part of June.

During this period the fruit is growing rapidly, so as to require more than one spraying to protect it.

In these localities the second brood worms are also irregular in their appearance. The attack commences in August and advances in October. In some localities the calyx cup spraying, if properly applied, is surprisingly effective, and in certain cases has proved all that is required for the control.

Under average California conditions the calyx cup spraying is an important factor, but does not effect the complete control, for the reason that too many worms enter at other places.

In order to make use of the facts in the life history of the codling moth it was necessary to have a suitable poison or spray material. The chemical side of the problem is then quite as important as the entomological. Especially is this true in any locality where the trees are likely to be injured by spraying.

The discovery that arsenic would poison codling worms, and so reduce the number of wormy apples was made many years ago. Paris green soon came into favor because it was found to be less injurious than white arsenic, and for many years this material was the standard spray for the codling moth.

Paris green was regarded by chemists as insoluble in water, and, therefore, could not injure the foliage when sufficiently pure, but it later developed that injury took place, under certain conditions, even with the very purest samples.

This was especially true in the Pajaro Valley, and so serious were the results of spraying for the codling moth that the apple growers had begun to fear that the worms could not be controlled. It was very apparent that the problem of spraying under the climatic conditions of the Pacific Coast had to be carefully studied.

The investigation of this problem was undertaken by the University of California in 1903, and has been continued up to the present time. Paris green was soon discarded as entirely unsuitable, and the remainder of the investigation has been directed to the study of arsenate of lead. This compound of arsenic is very much more stable and insoluble than any other known.

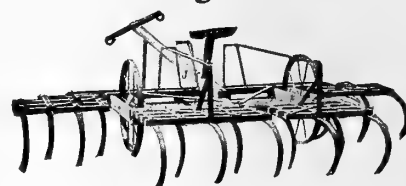
The solubility of arsenate of lead in water was considered so low that it would never cause any injury, but the

climatic conditions of the Pajaro Valley soon demonstrated this conclusion to be erroneous, and it was found that great injury might result from spraying with this newer insecticide, but the fact that certain lots of arsenate of lead which came to hand did no injury encouraged us to believe that the difficulty might be controlled. This was done after a very exhaustive investigation of arsenate of lead and other arsenicals.

The trouble was found to lie in the fact that several compounds might be formed when arsenic acid and lead oxide are combined. The only one of these compounds which meets the requirements—that is, sufficient insolubility in water—is the ortho compound. Two other arsenates exist, and are likely to occur in arsenates of lead. These are the pyro and meta compounds.

Arsenate of lead has now become the standard arsenical, and a considerable number of commercial brands are in use at the present time. These brands are almost exclusively either mixtures of

## The Forkner Light Draft Harrow



Is the only perfect light running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3½ feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expenses one-half even if you have but 5 or 10 acres of orchard. Full particulars upon request. Address LIGHT DRAFT HARROW COMPANY, Marshalltown, Iowa.

## FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

### BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

**Bridal Veil Lumbering Co.**  
Hood River, Oregon

### DO YOU WRITE?

We are the only publishing house in the country combining the publishing and dramatization of books. Among our book and plays successes are "Quincy Adams Sawyer," "Miss Petticoats," "Blennerhassett," "The Climax," "Marjie of the Lower Ranch," "Hope Hathaway," etc. Send us your manuscript. It may be just what we want. We also publish school books.

THE C. M. CLARK PUBLISHING CO.  
Boston, Massachusetts

## W. F. LARAWAY

DOCTOR OF OPHTHALMOLOGY

EYES  
TESTED



LENSES  
GROUND

Over 30 Years' Experience

Telescopes, Field Glasses  
Magnifiers to examine scale

Hood River Oregon and Glenwood Iowa

## Market Gardeners' Paper

Weekly Market Growers Journal—only paper printed especially for vegetable growers. \$1.00 a year, 52 issues. For 10 cents and names of three market gardeners we will send ten weeks with our popular booklet, "\$25,000 a Year From Twelve Acres." Send for free sample copies—it is the best way to judge.

MARKET GROWERS JOURNAL  
546 Walker Building, Louisville, Kentucky

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## SAMSON WINDMILLS



The Wind Mill that is different from all other makes and better because it has double gear wheels and carries the load between these and in the center of the mill. There is no side strain, nor any noise on the up and down stroke like there is with other mills. Built in the following sizes: 4, 6, 8, 10, 12, 14, 16, 18 and 20-foot diameter. Send for catalog.

**STOVER MFG. CO., MFRS.**  
ALSO FEED MILLS & GASOLINE ENGINES  
252 SAMSON AVE., FREEPORT, ILL.

## HARVEY BOLSTER SPRINGS



Soon save their cost. Make every wagon a spring wagon, therefore fruit, vegetables, eggs, etc., bring more money. Ask for special proposition. Harvey Spring Co. 784 17th St., Racine, Wis.

FREE TRIAL TO YOU

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



ortho or pyro or contain straight pyro. Notwithstanding this fact arsenate of lead is generally considered a safe spray, and very little complaint is heard regarding foliage injury over most of the United States.

These facts may cause people who are not acquainted with the conditions prevailing on the Pacific Coast, and especially in the Pajaro Valley, to fail to appreciate the exact requirements of the case. Also, it is not surprising that chemists and entomologists in general have been satisfied with a very incomplete knowledge of the chemistry of arsenate of lead.

The local conditions in the Pajaro Valley made it imperative to study this problem, with the resulting important additions to our knowledge of spray materials. These climatic conditions which have been referred to consist in the great abundance of wet fogs and dews, which occur almost every night. The foliage becomes thoroughly wet, but does not always drip, and a great many of the leaves retain the water until it dries up during the day.

This is just the ideal condition for the gradual solution and absorption of the arsenic. If the arsenical is soluble in water and affected by weathering, then the repeated and long continued action of small amounts of water would give the maximum effect. Any injuries in the surface of the leaf admits the fog water to the internal tissue. This water carries with it any substance which it may hold in solution.

If the arsenic in the spray deposits is being dissolved the time soon arrives when enough is introduced into the leaves to cause injury. The tissue begins to die around the points where the fog water gains entrance to the leaves, and these spots gradually enlarge until they may cover the greater portion of the leaf.

Before this time arrives many of the leaves turn yellow and fall. The falling of the leaves frequently occurs much in advance of the normal autumn shedding, and with bad cases of arsenical injury the trees are frequently quite bare by the end of August. The early loss of the foliage prevents the proper maturing of the fruit, with resultant small and comparatively worthless apples.

The arsenic also penetrates into the wood tissue, probably being carried by the sap vessels from the leaves. The amount which enters the wood is too small to cause the death of the tissue, but it greatly impairs the general vigor of the tree.

The early falling and killing of the leaves results in poor general nutrition conditions, which in itself causes profound disturbances of the normal growth for at least two years in the worst cases.

Anyone is able to appreciate the fact that these bad cases of arsenical injury must be avoided. On the other hand, we find very few orchardists, or even authorities, prepared to admit that slight injuries, such as may occur in the drier sections, may be worth considering.

It is my opinion that the experience of the Pajaro Valley is a very timely

warning to the entire apple producing area of the country, for it must be conceded that a material which does marked injury under the coast conditions will have more tendency to injure elsewhere than one which is harmless in the most trying circumstances. The orchards of the Pajaro Valley may then be taken as a sort of indicator to judge what a correct spray material should be.

What the ultimate effects of applying arsenicals which may produce injury will be no one can now say. Under the circumstances it certainly would be the wisest thing to take no unnecessary chances.

If the codling worm can be controlled satisfactorily with the ortho-arsenate of lead, then that arsenate should be used in preference to any other kind. The control of the codling moth with the very insoluble ortho compound has been demonstrated, not only for the Pacific Coast districts, but in many other parts of the country.

Perhaps there would never have been any agitation in Colorado had all the arsenicals applied been in the form of ortho arsenate of lead.

With a correct spray material and a precise knowledge of the life history of the codling moth, it should be possible to outline a thoroughly satisfactory spray program. This will differ for the various localities in the country, but it may roughly be outlined as follows: Spray very thoroughly just before all the blossoms have fallen, endeavoring to force

## The Deming "Samson" Sprayer Powerful, Durable, Low-Priced

Even though you already own and use a power sprayer, you have use for an outfit like the "Samson," which you can mount on a low wagon or a pair of skids, and take into corners, on slopes, etc., and do effective work everywhere. Like other

## DEMING SPRAY PUMPS



The "Samson" is built for business. It's a strong machine; has a long lever, big air chamber and smooth-bored, easy-working cylinder. It will develop a high pressure, enabling the operator to supply one or two leads of hose without rapid or continuous pumping.

The "Samson" is one of more than twenty Deming Spray Pumps. Order from your dealer or send direct to us—but be sure you get a "Deming" Catalogue on request.

First prizes were awarded Deming "Century" Barrel Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November, 10-19, 1910.

### The Deming Co.

870 Depot St., Salem, Ohio

Manufacturers of Pumps  
For All Uses

Distributing Agencies  
In Principal Cities

## The Great Many-Purpose Irrigation Machine

It will cut your drainage ditches;  
Stir your soil; Level your land;  
Cut laterals; Cut your sage-brush;  
Throw up dikes and grade roads;  
Pick up dirt—carry it—and drop it  
where you want it.

## 20th Century Grader

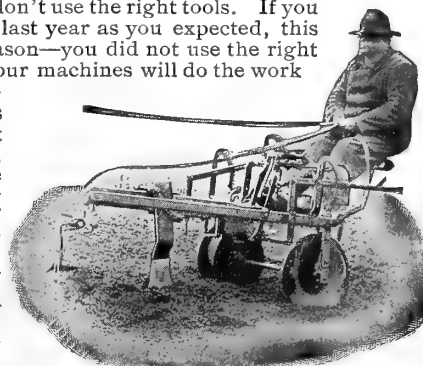
### The Original One-Man Machine

The 20th Century weighs but 600 pounds. One man with two or four horses operates it. Turns in 10-foot circle. Does twice the work of the big, heavy grader with four horses with half the effort.

Mr. Fruit Grower—you can't expect big returns from your work if you don't use the right tools. If you did not do as well last year as you expected, this is probably the reason—you did not use the right tools. If one of your machines will do the work of several expensive ones it means bigger profits at the end of the year.

You shouldn't be without a 20th Century Grader on your place for it has a score of uses.

Let us tell you what others say of it. Send postal for detailed information about these wonderful machines.



THE BAKER MANUFACTURING CO., 542 Hunter Bldg., Chicago, Ill.

the material into the calyx cups. For this application use ortho arsenate at the rate of six pounds to 100 gallons. This estimate being based on the usual form of the commercial lead—that is, 50% water.

This application will occur some time in April for the majority of the Pacific Coast sections, and should protect the apples from those worms which endeavor to enter at the calyx.

A second application about the middle of May will protect the outside of the fruit at the time when the first codling moths are beginning to appear. This application should be very thorough, but the quantity of arsenate of lead may be reduced to four pounds to 100 gallons.

A third spraying for the first brood will do no harm, and should be applied in the early part of June, using the same strength as for the second.

If these applications have been sufficiently thorough the second brood may be so small as to require no spraying.

The orchardist can determine this by looking for wormy apples on the ground in July and the early part of August. If very few can be found it indicates that the first brood worms have been well controlled. A sufficient control to eliminate the second brood spraying would be the case where not more than two or three wormy apples could be found per tree.

The average grower will not get results which warrant him in neglecting the second brood spraying. Usually one application will suffice, and that should

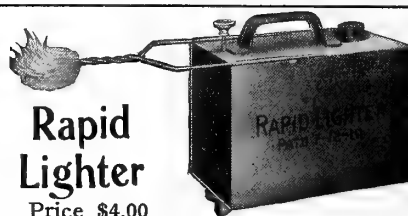
be made early in August, but not in July, except in the warmer valleys, where the codling moth emerges earlier. The same strength of material and method of application as is recommended for the other sprayings should be followed.

## VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.

HOOD RIVER, OREGON



### Rapid Lighter

Price \$4.00

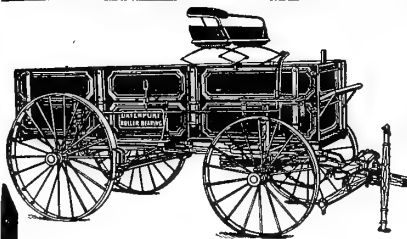
For use in lighting smudge pots in orchard heating. Almost indispensable when fuel oil is used. It is a tremendous saving of time when time is valuable; also of material. For description, address JOHN STEEL, Range Building, Omaha, Nebraska.

This procedure, carefully carried out, should insure 95% worm-free apples.

In the Pajaro Valley and adjoining localities I find that the most prevalent cause of failure to secure the best control is due to the neglect of the August spraying.

The orchardists and apple buyers are largely influenced by the fear of knocking of fruit with spray rods and the spray outfit. A little reflection should convince them that it would require special effort on the part of the men to dislodge 2% of the fruit. Then, if this application would save 10% from the worms, the loss of the small quantity which would occur when ordinary care was used is entirely negligible.

Practical entomologists and horticulturists have still another phase of the problem to consider. This arises from the fact that the codling moth is not the only pest of apples and pears. Several other insects and diseases are causes of considerable damage, and frequently some one of these may be more destructive than the apple worm. Then the control of the worms alone may not bring the saving necessary to financial success, or produce first-class fruit. Other remedies than arsenate of lead are required for the control of some of these pests, but to make a separate application to correct every disorder would require a far too elaborate spraying program, and greatly increase the expense. If possible, these various remedies should be combined in a single application, and the problem of preparing this combined



The Surest Sign  
That You Are a

## Progressive Farmer

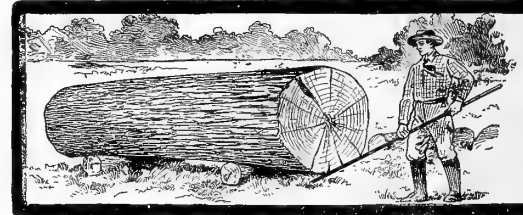
is the Ownership of a

## DAVENPORT Roller-Bearing Steel Wagon

You know a farmer by the implements he uses. And the surest sign of progressiveness is in the Davenport Roller-Bearing Steel Wagon. Some day every farmer will own a Steel Wagon. But the far-sighted, money-making farmer of today is using the Davenport now—is benefiting from its many advantages now. He's setting the pace—his neighbors will soon follow, but he's getting the extra satisfaction now.



You  
Know  
About  
This

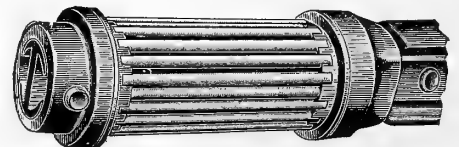


You know how much easier it is to roll a log than it is to drag it. The ordinary wagon is little more than dragged in comparison with the Davenport. That makes the wonderful difference in the draft. Think of your horses when you buy your next wagon. Remember also that Roller-Bearings mean more trips, easier trips, with fewer horses.

The Davenport owner knows the value of these features: The all-steel construction which means lifetime service. The guaranteed capacity of 5000 pounds which assures safety under heavy loads. The gears of solid steel rolled into its strongest forms and trussed like a bridge, which combines lightness and strength. The wheels of steel, with strong, round spokes forged solidly into the hubs and hot-riveted in the tires, which means that there's nothing to dry apart, shrink, rot or work loose. The ROLLER-BEARINGS insure 30% to 50% lighter draft. No tires to set; no breakdowns; no repairs and the automobile hub enables him to oil without removing the wheels.

You should know what these advantages really mean to you now. Write us for full information contained in Package No. 22, and we will be pleased to write you fully, whether you are in the market now or not.

**Davenport Wagon Company, Davenport, Iowa**



The Roller Bearing.

spray is the most exacting and important of any now facing the entomologist and plant pathologist.

The problem is one involving insect pests, plant diseases and the chemistry of insecticides and fungicides. Also, the physiological effects of spray materials and other treatments of the trees enters as a very important factor. The delicate nature of this last phase of the problem is usually underestimated, but the conditions of the Pajaro Valley are such that the investigator is frequently and forcefully reminded of its importance. Owing to this fact and the urgent need for sprays which will do the work in this

locality, it is quite probable that much valuable research work will be done here, and the whole science of plant pest control considerably advanced. Already much has been accomplished by the investigations conducted in the Pajaro Valley, and several investigators have contributed to these results.

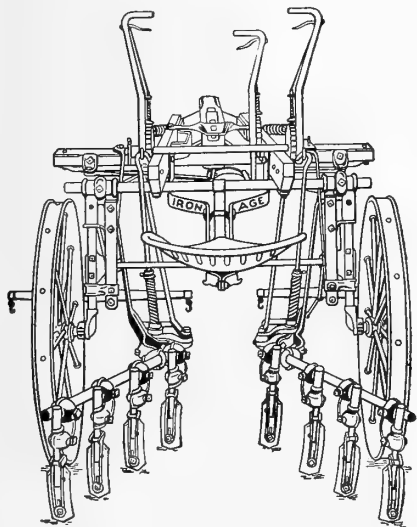
The most important results of the local investigations are the determination of the properties of lead-ortho-arsenate and the invention of a process of manufacture to produce this compound cheaply, and with certainty. The iron sulphide spray for the apple mildew is also an important advance in the knowledge of fungicides,

and the use of this spray in combination with arsenate of lead has given good results in the control of worms and mildew. Again, iron sulphide, arsenate of lead and nicotine may be combined, giving an effective spray for aphids as well as the other two pests mentioned. These examples are cited to indicate the lines along which the most profitable investigations of the future may be safely directed.

The local field is a very extensive one, and the needs of the apple industry are most pressing. There is work for many investigators, and all who desire to work here are more than welcome.

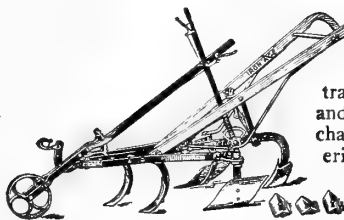
## 75 Years of Quality Production of Iron Age Farm and Garden Implements

Stephen Bateman started the Iron Age business in 1836. He was a farmer himself and knew the farmer's needs. He knew that the progressive farmer always wants the best. He also knew that highest quality in farm and garden implements is always the cheapest in the long run. So he built up the Iron Age business along strictly quality lines. The Iron Age line stands today at the head of the list. This line has always served the farmer well and made a friend of him. Four of the Iron Age line of implements are briefly described below. This line is sold by over 200 agents in the Northwest. The complete catalog, full of illustrations, will be sent postpaid, free of charge, upon the receipt of your name and address. Ask for Catalog No T



**No. 82 PIVOT WHEEL RIDING CULTIVATOR**

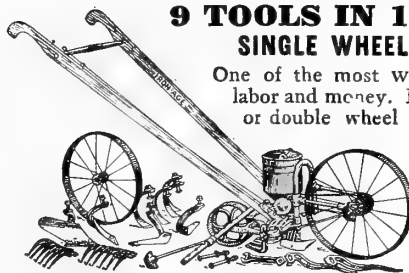
You must cultivate your soil frequently if you expect to get the most out of it. You must have a strong machine and one that is easily operated. It must be convenient of adjustment so as to insure perfectly level cultivation under all conditions. It must be so adjustable so as to cultivate deep or shallow as needed. It must do a variety of work. It must suit the potato farmer, the general farmer and the truck gardener. It must be easily set for use in a wide variety of crops so must have a wide range of adjustments. It must be easily guided so that a man or boy can run it either on hills or level ground. This Iron Age Front Wheel Riding Cultivator is all of this and more too. The catalog will prove interesting. It describes this cultivator in detail.



**NO. 6 HORSE HOE AND CULTIVATOR**

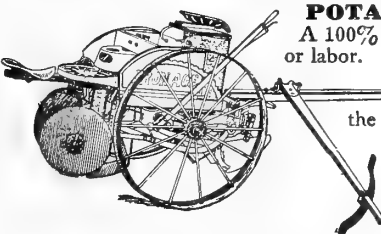
Strong, light and compact. A high steel frame that makes the tool run steady and clear of trash. Several adjustments to side hoes, both sidewise and at different angles. Can be reversed for hoeing and changed from side to side with points forward for covering. As a cultivator expands from 14 to 30 inches.

Made for all sorts of hoeing and all sorts of cultivating—admits of many adjustments to meet different conditions of different vicinities. Hoe standards solid steel. This implement deserves the most careful consideration of all farmers. Described in detail in catalog.



**9 TOOLS IN 1 — NO. 6 COMBINED DOUBLE AND SINGLE WHEEL HOE, HILL AND DRILL SEEDER**

One of the most wonderful machines ever devised — saves time, labor and money. Is simple, strong and convenient. Runs single or double wheel for hoeing, raking, cultivating, plowing, hill and drill seeding, etc. Sows the greatest range of variety of seeds. Distributes small packets with same uniformity as large quantities. Seeds in sight as they pass into furrows. Tool changes instantly from drill to hill or reverse. Drops seeds 4 to 24 inches apart. Adjustments simple and quickly made.



**POTATO PLANTER**—The king of potato planters.

A 100% efficiency implement. No waste land, material or labor. Feeds and drops seeds without injury and in the proper place—every time. Plants and fertilizes at the same time. Yet no fertilizer touches the seed. Iron Age Potato Planter takes many attachments to meet extreme conditions and do special work—such as corn, bean and pea planting, side dressing and ridging. This machine is a money-saver. The catalog tells a lot more than we have room for in this space.

We can give names of some of the most successful farmers in the Northwest who use Iron Age tools

**R. M. WADE & CO.**  
**PORTLAND :: :: OREGON**

**OLD ESTABLISHED**  
(48 YEARS IN BUSINESS)  
**UP-TO-DATE**



Four Year Old Cherry Trees, Not Irrigated

*We Know* and the only way for *You to Know* is for us or someone else to tell you *that* we grow a greater variety of fruit, and of better quality, at

# The Dalles, Oregon

than any other place in the *Great Northwest*, and bear in mind that none of our fruit is irrigated. This is an indication of its superiority, both as to flavor and keeping quality. If you want to raise fruit, you must, in order to succeed, raise the best—this you can do by locating here. The above cut shows a portion of a beautiful 83-acre tract which we have for sale, all in orchard and highly improved, adjoining corporate limits of The Dalles, a city of 7,000 people and rapidly growing. This place is splendidly situated for subdividing.

*Write Us for Particulars*

R. H. WEBER, THE DALLES, OREGON



**FROM ORCHARD TO DEPOT BY AUTO.**—On a certain night last summer if a visitor to Chicago had been in a hurry to get to the North Side on a North State or a North Clark Street surface car he would have had to take the Elevated road.

For two hours, and a half the writer watched a tie-up on all North Side surface cars caused by the fact that a trainload of peaches or some other perishable fruit had arrived in town Saturday evening too late to be marketed. It was being sold at "cut-throat" prices because it was feared that the fruit would have been worth nothing at all the following Monday morning. Hundreds of struggling women were there buying their winter preserves; hundreds of pack peddlers were struggling to fill their baskets for distribution that evening, and scores of Greek wagon fruit vendors were gathered along the entire length of South Water Street, shoving, pushing and scrambling in their effort to get something almost for nothing. It was a view of bustling city life worth going to see, but so common along that street that no attention was paid to it except by those whose movements were hindered by the congestion of traffic.

Whether the farmer who grew that fruit got a fair price for it and the Chicago merchant lost, or whether it was shipped on consignment and the burden of the sacrifice fell upon the farmer, the writer does not know. But it looks to him that if transportation had been just a little swifter and the train bearing that fruit had reached the city early Saturday morning instead of early Saturday evening, both the merchant and the grower would have realized fair profits.

This is just one of the incidents which show how completely transportation can make or break a fruit grower.

To a great many people on the farm transportation from the point of view of speed does not begin until the fruit reaches the depot. The possibility of an earlier train, or of making valuable connections, is often overlooked because of the inability to make any better time between the farm and the freight shed. To the more modern, however, that is to those who are quickest to grasp each new invention as if it were made especially for their convenience, the race against time begins at the berry patch or at the orchard. In this race, as in most other races against time, Old Dobbin is not one of the entries. His place has been taken by the motor-driven vehicle. The long-drawn battle between gasoline and oats which has been waged in the cities has spread to the country, and in the last few years the high-wheeled auto delivery wagon of the metropolitan grocer and the metropolitan laundryman has become the delivery wagon of equally aggressive rural dairymen and fruit growers. This victory of mechanical power over animal power was determined not by sentiment, nor by the faddist, but by the two cold, hard guiding rules of Twentieth Century choice—speed and economy.

When the groceryman found that he could save two-thirds of his delivery expenses by using a light auto delivery wagon he forgot the many centuries of equine faithfulness that was back of the horse and installed an auto delivery system. The same thing is occurring in the country. The horse is losing out, not because he is not willing, but because he cannot stand the pace. He lacks the endurance of a machine run by power.

The writer, as a boy in a fruit-growing country, remembers many a pleasant evening drive to town after a busy day in the field, but he also remembers that he was never allowed to use the horse which had worked all day; and if he went for a drive on Sunday he was forbidden to take the horse which had worked all week. In those days, before auto buggies appeared on the farms, we went to the village, two miles away, on week nights, and to the city, twelve miles away, on Saturdays. This last was a big trip, something like going abroad. Nowadays, in that same region, farmers deliver a load of fresh vegetables or freshly picked fruit to that same city with their auto wagons, and are back to their farms before the regular day's work begins. During the day it is not an uncommon thing to take a pleasant spin to the city, do a little shopping, pay a few calls and get a little excitement—all on the same

car which made the early morning marketing trip with the fruit and produce. And then, again, in the evening a short trip is frequently made by the younger members of the family. Formerly one trip with a horse and buggy meant twenty-four hours for the horse, which was considered a good day's work.

The opportunity which the possession of such a car opens to the farmer's family for a social life is revolutionizing the attitude of the farmer's family toward living on the farm. It is doing more than the rural telephone to drive away the loneliness and the discontent which has always been a part of the socially inclined woman's life on a secluded farm.

Of course, the horse was a dual purpose means of transportation, useful in both business and pleasure, as every farmer's son knows, but it had its limitations. It required a lot of care, it must be carefully fed and housed, it is not clean to handle after you are all dressed up and it has to be "put up" at night. Then there are certain

weather conditions when it is cruel to take a horse out at all. On the other hand, with an auto delivery wagon, whether you put the back seat on and take the family to a party or whether you take an hour off to make a quick delivery to some early train of a half ton of fruit, the question of weather does not enter into this. The fear of overwork never arises, there is no morning feed, no stables to clean and no harness to put on. It needs no argument to show that the commercial car, as a matter of convenience, has the advantage.

In regard to speed the conditions are the same. The average high-wheeled auto wagon will make from fifteen to twenty miles an hour. It will climb any hill and bad roads do not have to be considered at all. Last winter, in Chicago, all Michigan Avenue smiled when one blizzard day one of these cars was kept busy towing expensive, high class pleasure cars and roadsters, that were unable to make any headway against the storm.

Fruit growers who have suffered through delay or through missed trains are keen to take up the

# MARK

# 1/2

# Price



# TWAIN

# A New Edition

Now for the first time you get a complete set of all Mark Twain's writings at just exactly one-half the price they have ever been sold before. This is a new edition, just as complete as the old one, which still sells, by the way, at \$50.00. This new edition is only \$25.00—for the 25 volumes.

**It had been Mark Twain's ambition to have his books in every American home, and he made a great personal sacrifice to bring about this remarkable opportunity—for the first time in the history of publishing, copyrighted books are sold at the price of non-copyrighted books—the chance will not come again.**

But for Mark Twain's action this would have been impossible. Never before has a copyrighted library set of a standard author's works been issued at such a low figure.

## His Complete Works— 25 Beautiful Volumes

Brander Matthews says: "Mark Twain will be included in that group of writers headed by Molière and Cervantes. With the exception of Count Tolstoi, Twain was the greatest of recent modern writers, and will be handed down to posterity through the trio of his works 'Huckleberry Finn,' 'Tom Sawyer,' and 'Pudd'nhead Wilson.' Twain is a greater stylist than Stevenson or Thoreau, and his 'Man that Corrupted Hadleyburg' is one of the finest works in English literature." Mark Twain himself wrote a preface to this edition. Brander Matthews has written the biographical criticism of Mark Twain and his work. There are portraits of the author at periods when the different books were in process of writing.

There are beautiful pictures by such artists as Frost, Newell, Smedley, Thulstrup, Clinedinst, Kemble, and Oppel. The binding is in rich red rep silk book cloth, with title labels stamped in gold. The books are printed on white antique wove paper, especially made for this edition. Each volume is of generous size and bulk, 5x7½ inches.

**HARPER & BROTHERS**

A Catalogue of Our Standard Sets of Books will be sent upon request

HARPER &  
BROTHERS  
Franklin Square  
New York City

Please send me for examination, carriage free, a set of **MARK TWAIN'S WORKS, Author's National Edition**, twenty-five volumes, cloth binding. It is understood I may retain the set for five days, and at the expiration of that time, if I do not care for the books, I will return them at your expense. If I keep the books, I will remit \$2.00 a month until the full price, \$25.00, has been paid, or, within thirty days, \$23.75 as payment in full.

Signature.....

Send books to.....

## WHY PAY FREIGHT ON WATER?

BUY

**Vreeland's Electro Arsenate of Lead**

IN POWDERED FORM

The most effective and economical insecticide for all leaf-eating insects. Electro is the only successful powdered Arsenate of Lead because it is the only one that mixes instantly with water in such a finely divided state that every drop of spray contains the right amount of arsenic. It cannot be washed off by rain, and will not injure the newest, tenderest foliage.

We guarantee it to contain 30 per cent arsenic oxide—50 per cent more than other brands—as proved by Connecticut and New Jersey Agricultural Experiment Station tests. Write us for them. Save the freight on water—there is 40 to 60 per cent in all pastes. Put in the water at home.

We also have the best paste on the market, and will prove it if you prefer Arsenate of Lead in this form.

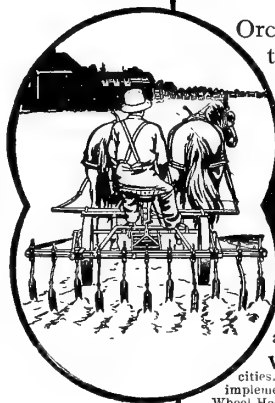
Write us if your dealer cannot supply you with Electro brands. Do not accept substitutes.

**CHAS. H. LILLY & CO., General Distributors, Seattle and Portland**  
(Agents in all principal districts)

Manufactured by VREELAND CHEMICAL CO., 50 A Church Street, New York City

**Guaranteed Cultivators**

Orchardists in California and other fruit-growing sections know that the Planet Jr Orchard and Universal Cultivator does more and better work than any other implement in orchard, vineyard, and hopyard. Thousands are in actual use today giving bountiful results.

**Planet Jr. No 41**

is strong, substantial, and lasting, and fully guaranteed. It has low wheels enclosed by a steel frame, with steel tongue. Carries cultivator teeth sweeps, hoes, and furrows, and is equipped with side-hitch and fruit and tree shield. Adjustable for depth and width of cut. Easily handled.

We carry stock in San Francisco. Agencies in all principal Pacific Coast cities. Write for name of nearest agent, also new 56-page catalogue of all 1911 Planet Jr implements, including Orchard Cultivators, Beet Cultivators, Horse Hoes, Seeders, and Wheel Hoes. Free on request. Write today

**S L Allen & Co Box 1106v Philadelphia Pa**

# Malthoid

# Roofing

The dependability of Malthoid Roofing has been proven by special tests covering a period of many years.

Malthoid will last as long as the building it covers. It is inexpensive, easy to lay, and your roof troubles are over when Malthoid is laid.

Made by **THE PARAFFINE PAINT COMPANY**

San Francisco and Everywhere

Stewart Hardware & Furniture Co., Agents, Hood River, Oregon

**IT'S FREE**

Send for it.  
A new  
and valuable  
book on

**Cheerful Homes**

This booklet is illustrated with pictures of the most beautiful bungalows of Southern California

auto wagon. Those who do their marketing in neighboring towns have found that the commercial car is quicker and cheaper than the horse; and those who are making money and who are possessed with the desire for the good things of life, and the comfort and contentment of their families, and yet who could not afford an exclusively pleasure automobile, have received the useful commercial dual purpose, high-wheeled car with open arms.—Contributed.

FOR several years, ever since orchard heating became an acknowledged and important factor in the fruit industry, hundreds of articles have been written on the subject; some, merely theoretical, others showing a sad lack of knowledge of the practical side of frost fighting, while the balance have been of the greatest value to the orchardist, and have accomplished a great deal of good. These articles have proved beyond a doubt not only the success of this method of protection, but the overwhelming need of frost prevention.

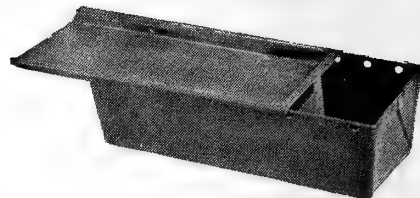
Not often, however, have any of these articles discussed the very important subject of "the number of heaters required to the acre." In fact this subject has seldom been discussed outside of orchard heating advertisements, and it is so important that I believe it deserves the closest attention of this convention.

The question of the number of heaters per acre is a very delicate one to handle, especially for an orchard heater manufacturer, without being accused of viewing the matter from a prejudiced standpoint, and my only excuse for bringing the subject before you is the vital importance of having it discussed and the fact that I am not only a manufacturer but a fruit grower, who has the welfare of the industry at heart.

I believe I am in a better position to handle this thesis than any other manufacturer on account of the fact that we manufacture all sizes of heaters, from the smallest to the largest, and, therefore, nothing I have to say should be construed as furthering personal interests. Neither do I wish any of my friends in the same line of business to take anything I say personally, for I do not want to condemn or support any particular heater. What I have to say is in condemnation of large fires and not large heaters.

Orchard heating in its present form is only a few years old, but it has been in existence in one form or another for many centuries. It is said that Pliny, the Elder of Rome, recommended the practice of smudging in the first century, and as early as the sixteenth century Oliver de'Serres, the famous French horticulturist speaks of its wonderful protection. In 1796, one of the Southern provinces of Germany enforced a law com-

## The Hamilton Reservoir Orchard Heater



Acknowledged and proven, after three years' most successful use, the standard of efficiency and the KING of all heaters.

Millions of dollars' worth of fruit saved from spring frosts by its use.

Most wonderful invention of the age, and the fruit grower and vegetable producer reap the benefits.

The "Draw the cover and regulate the fire" principle has won, and we offer you the very best your money can buy, with absolute protection to your crops. A quarter of a million heaters in the hands of inexperienced growers last spring has proven every claim we have made. Get in line with other progressive growers and protect your crops from frost. Write us today for full information and for the story of "Frost Fighting," which will interest you.

**The Hamilton Reservoir Orchard Heater Co.**

Grand Junction, Colorado

selling the orchardists to protect their crops against frost and forced each man to give his services in case of danger. This law was worked out on very much the same system that frost fighting in the Grand Valley is today. Throughout this long career of frost fighting, there is not a single record showing the use of large fires, which substantiates the theory that there is no need for great heat locally, but there is need of numerous small fires well distributed.

These old records would have little value, however, if it was not for their substantiating the theory that modern science has followed. Every scientific principle of ancient or modern origin supports the theory that to get the best results from a certain amount of heat, the same must be thoroughly distributed.

The government in all of its reports on smudging or orchard heating makes a strong point of small fires and warns the growers against the use of large fires (see Farmers' Bulletin No. 104 and Year Book, Department of Agriculture, 1909, page 360). Furthermore, the majority of practical orchardists who have tested the various methods for themselves will agree with me that the best results were obtained with small fires.

Large fires have the same effect that old-fashioned hearth fires have—your face is scorched while your back freezes.

When furnaces were most generally used in large houses or buildings almost invariably two furnaces would be used, as it was found that two furnaces of smaller type would give more heat from a ton of coal than one large furnace.

Steam heating follows the same principle; numerous small coils are scattered around or throughout the building, church or auditorium, as such coils heat the building much more evenly than half the number of coils would, double the size.

When it comes to out-of-door heating this principle becomes all the more important, as the air drafts are stronger.

Heat rises, and when the fires in an orchard are placed too far apart there is no time for the heat waves to meet under the blossoming trees

## Johnson's Share Only 7%



I've got a most profitable chicken raising message for 1911 to send you—and my book, Johnson's own writings again. Hundreds of photographs—every page a poultry sermon on how simple and sure many thousands of satisfied customers of mine have proved Old

**M. M. Johnson**

Trusty. I'll write my price to you personally—less than \$10—freight prepaid (E. of Rockies) and show you how I'll make less than 7%—less than 70c on every Old Trusty on over 100,000 output this year.

## Old Trusty 1911 BOOK FREE—Send Name

I used to have to make as high as 16% when I sold one-half as many. But I'd rather put down the price and sell more than twice as many on 7% making profit. And Old Trustys are better than ever this year—over 80% hatches guaranteed and my guarantee to last you ten years. Handsome metal encased over asbestos covering. Beginners find them simple, easy to run and sure. Expert poultry raisers praise Old Trustys for highest standard success.

30  
60  
or  
90  
Days'  
Trial  
—  
10  
Year  
Guar-  
antee



Under  
\$10  
Now

**JOHNSON**  
Pays the Freight  
(East of the Rockies)

Whatever else you do—don't miss this offer. Don't miss my 1911 Old Trusty Book with hundreds of photographs. Be sure to write me a postal before you buy anybody's machine this time. Address

**M. M. JOHNSON**  
Clay Center Nebraska



## LACK OF RAIN DOESN'T WORRY THESE FARMERS

Last year several hundred farmers decided that they had worried just about long enough over lack of water. So they bought I H C Gasoline Engines and installed irrigation systems of their own.

Now they have the most practical kind of crop insurance and they are independent of the irrigating companies.

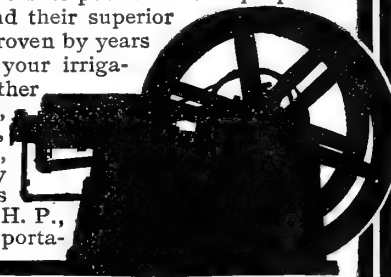
Nearly every farm has a creek, slough, pond, or some other source of water supply that can be turned into a valuable asset by the installation of an

## I H C Gasoline Engine

Why not put yourself in a position to have water where and when you want it—irrigate your entire farm if need be?

I H C Engines are admittedly the best power for this purpose. They require but little attention and their superior efficiency and economy have been proven by years of service. In addition to running your irrigating system they will do a host of other things such as running a cider press, alfalfa cutter, feed grinder, saw, washing machine, cream separator, etc., better and cheaper than any other power. There are all styles and sizes to choose from, 1 to 45-H. P., horizontal or vertical—stationary, portable, or traction.

Call on the I H C local dealer and let him show you the one best adapted to your needs; if you prefer, write direct for the I H C Engine catalogue.



### I H C Service Bureau

What is it? A clearing house of agricultural data.  
What does it do? Helps farmers to help themselves.  
How can it be used? By sending your farm problems and puzzling questions to the Bureau.  
We are co-operating with the highest agricultural authorities and every source of information will be made available to help solve your difficulties. We shall be pleased to have an opportunity to assist you. Write the I H C Service Bureau

WESTERN BRANCH HOUSES: Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

INTERNATIONAL HARVESTER COMPANY OF AMERICA Chicago U S A (Incorporated)

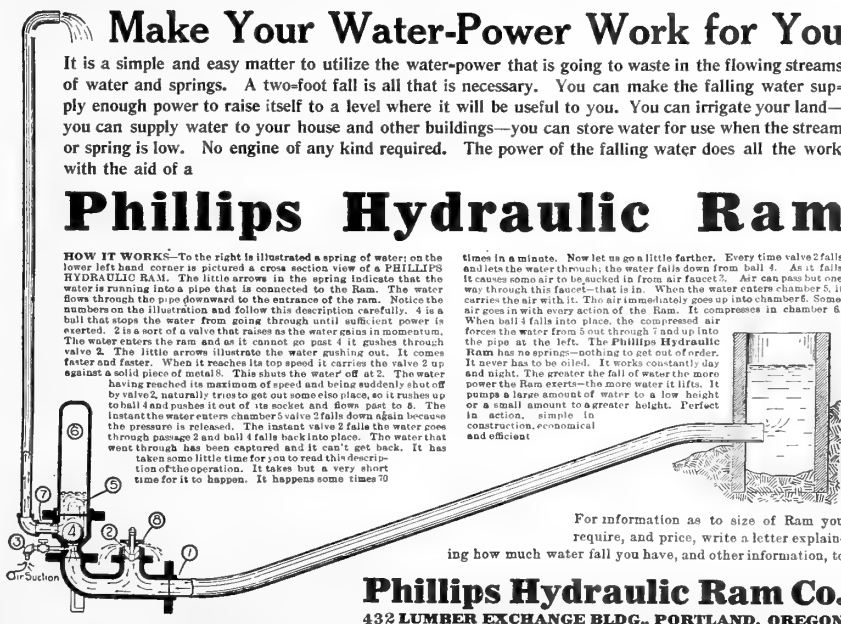
## Make Your Water-Power Work for You

It is a simple and easy matter to utilize the water-power that is going to waste in the flowing streams of water and springs. A two-foot fall is all that is necessary. You can make the falling water supply enough power to raise itself to a level where it will be useful to you. You can irrigate your land—you can supply water to your house and other buildings—you can store water for use when the stream or spring is low. No engine of any kind required. The power of the falling water does all the work with the aid of a

## Phillips Hydraulic Ram

**HOW IT WORKS**—To the right is illustrated a spring of water; on the lower left hand corner is pictured a cross section view of a PHILLIPS HYDRAULIC RAM. The little arrows in the spring indicate that the water is running into a pipe that is connected to the Ram. The water flows through the pipe downward to the entrance of the ram. Notice the numbers on the illustration and follow this description carefully. 1 is a ball that stops the water from going through until sufficient power is exerted. 2 is a sort of a valve that raises as the water gains in momentum. The water enters the ram and as it cannot go past 4 it rushes through valve 2. The little arrows illustrate the water gushing out. It comes faster and faster. When it reaches its top speed it carries the valve 2 up against a solid piece of metal 8. This shuts the water off at 2. The water having reached its maximum of speed and being suddenly shot off by valve 2, naturally tries to get out some other place, so it rushes up to ball 4 and pushes it out of its socket and down past to 5. The instant the water enters chamber 5 valve 5 falls down again because the pressure is released. The instant valve 5 falls the water goes through passage 2 and ball 4 falls back into place. The water that went through has been captured and it can't get back. It has taken some little time for you to read this description of the operation. It takes but a very short time for it to happen. It happens some times 10

times in a minute. Now let us go a little farther. Every time valve 2 falls and lets the water through, the water falls down from ball 4. As it falls it carries some air to be sucked in from air faucet 7. Air can pass but one way through this faucet—that is in. When the water enters chamber 5, it carries the air with it. The air immediately goes up into chamber 6. Some air goes in with every action of the Ram. It compresses in chamber 6. When ball 4 falls into place the compressed air forces the water from 5 out through 7 and up into the pipe at the left. The Phillips Hydraulic Ram has no springs—nothing to get out of order. It never has to be oiled. It works constantly day and night. The greater the fall of water the more power the Ram exerts—the more water it lifts. It pumps a large amount of water to a low height or a small amount to a greater height. Perfect in action, simple in construction, economical and efficient



For information as to size of Ram you require, and price, write a letter explaining how much water fall you have, and other information, to

**Phillips Hydraulic Ram Co.**  
432 LUMBER EXCHANGE BLDG., PORTLAND, OREGON

Double your crop yield.  
Double your income.

USE

# Nephi Land Plaster

Famous throughout the West. The dependable brand that has brought results to the scientific and industrious agriculturists of Oregon and the Northwest for more than twenty years. Highest chemical and most desirable physical qualities of any land plaster on the market.

## CAUTION

Insist on NEPHI. Do not risk an experiment.

*Sold by the most prosperous  
dealers in every community.*

**NEPHI PLASTER &  
MFG. CO.**

Main Office: Boston Building  
Salt Lake City, Utah

WRITE FOR BOOKLET

before the air currents carry the heat into the upper strata.

Years of experience have proved that forty square inches of fire area in one place is as large a fire as should ever be used. The forty square inch opening has come to be known as the "Standard" opening. Experience has also shown that for each degree of rise in temperature 400 square inches of fire area per acre are necessary on the average. This will vary, of course. High winds will make necessary greater heat, while on very still nights often half of this amount will accomplish the same purpose.

At this average it will require four thousand inches of fire area per acre to raise the temperature ten degrees.

With the standard opening for each heater, it will require one hundred heaters to accomplish this result. It will take an opening of eighty square inches of fire area per heater if only fifty heaters are used. This is my reason for condemning large fires.

Large receptacles are more expensive, and the grower seldom is willing to purchase a large heater if it is going to cost him double as much, and, therefore, he compromises by using only half enough of the large heaters. We orchard heater manufacturers are to blame for this, however, for we assure our customers that half as many large heaters are just as efficient, in spite of the enormous number of scientific facts that prove we are wrong. The growers take our word for it, and they are the ones who suffer.

My objections to large fires are principally the fact that large fires create a strong draft, which carries the heat far up into the air and causes the cold drafts to rush in from the sides to take its place, and that large fires do not heat evenly. In one place the heat will be great enough to scorch the trees, while half way between the fires Jack Frost will probably be getting in his work. This is always the same unless twice as much heat is being produced as is necessary.

Large receptacles are nice, and I recommend them for the grower who is willing to use them as a reservoir to save refilling so often. This is the only excuse for the existence of a large heater, and it should be borne in mind that just as soon as a large receptacle is used for the purpose of creating more heat a greater quantity of fuel will be consumed, and the heater will have to be refilled just as often as if it were a small heater.

So strongly do I feel upon this subject that I would rather see the growers use a common lard pail, which is patented by no one, using 150 of them to the acre, than have them use only 50 of our No. 3, or some other reservoir heater, for

**Stanley-Smith  
Lumber Co.**

WHOLESALE AND RETAIL

**LUMBER**

*Lath, Shingles, Wood, Etc.*

HOOD RIVER, OREGON

**FRUIT** Western  
Soft Pine.  
Light, strong  
and durable.

"Better Fruit"  
subscribers  
demand the **BOXES**  
"Better Box."

CAN MAKE TWO CARLOADS DAILY

**Washington Mill Co.**

Wholesale Manufacturers

Spokane, Washington

## A NEW INDUSTRY

The Utilization of Wood Waste by Distillation. A general consideration of the new industry, including a full description of the distilling apparatus used and the principle involved, also methods of chemical control and disposal of the products, first edition illustrated by seventy-four engravings, 156 pages. This book is cloth bound. It will be sent to any address, postpaid, on receipt of \$3.20.

A hand book on fermenting, distilling and denaturing alcohol from farm products and wood waste. Trade secrets, no licenses, only a permit, and that is furnished free. Red tape removed, including free tax denaturing alcohol laws. A plain statement of facts for those interested. The latest just out, 280 pages, 60 illustrations, 12mo. cloth. Price \$1.20, postpaid.

Free Tax Industrial Alcohol—Corn stalks and cobs, waste vegetables and wood waste, shavings and old saw dust are now converted into industrial alcohol at ten cents per gallon; sells for fifty cents. Unlimited demand in every village for motors, automobiles, cooking stoves, etc. A five-gallon apparatus makes one gallon per hour; is simple as a corn mill, almost automatic, inexpensive; pays for itself every month. No tax, no licenses; only a permit, and that is free. Orders come in fast. Write today for free farmers' circular No. 9. Address

The Wood Waste Distilleries Company, Inc.  
Wheeling, West Virginia, U. S. A.

## Denatured Alcohol in Solid Form

Cleveland Special Dispatch—September—A well-known Wheeling, West Virginia, chemist has succeeded in producing chunks of denatured alcohol in crystal form, by means of a small infusion of certain acids, very closely resembling physiologically the effects of ethyl alcohol distilled from sawdust. The method employed and the results obtained are somewhat similar to the crystallizing of rock candy or that of saccharine, containing as it does 350 times the sweetening strength of cane sugar, so this alkaloidal crystallized alcohol contains many times the strength of the ordinary denatured fluid alcohol. They will yield 194-proof denatured alcohol, with a greater heating and cooking power for stoves than gasoline, and it is absolutely non-explosive.

A sample can containing 50 solid cubes, a stove and the secret formula showing how simple it can be made at home, will be mailed to you, postpaid, on receipt of \$5.00, or express C. O. D. Address

**The Wood Waste Distilleries Co.**

INCORPORATED

DEPARTMENT H

Wheeling, West Virginia, U. S. A.



rarely will a season pass without the need for greater heat than can be obtained from fifty heaters with the standard opening. It would be better to use three times as many little heaters, well distributed, lighting them as they are required, than to increase the heat by opening the fifty reservoir heaters to the intermediate or reservoir opening, and the cost of equipment will be less. Some people say that the heaters will be in the way, and that the fewer used to the acre the better. This is not so. Large fires have to be placed in the open, away from the trees, which places them in the way of hauling, spraying, plowing etc., while small fires can be placed in the tree rows, and out of the way of any orchard work. I have used both in my orchards, and know how they work.

Orchard heating is no longer an experiment, but has become one of the most important branches of orchard work. There are thousands to testify as to its great protection. We all know of the great need for the same in all sections; therefore these subjects are not as important, but the ways and means of obtaining the best protection with the least cost is of vital importance, and merits a thorough discussion and the closest investigation.—P. H. Troutman, President The Round Crest Canning Company, Canon City, Colorado, at meeting of Colorado State Board of Horticulture.

A MASS MEETING of the fruit growers of Goodnoe Hills and Sundale was held on January 2nd for the purpose of forming an organization of fruit growers of these two districts. The meeting was called by notice posted at the Goodnoe Hills postoffice. At 2 o'clock in the afternoon the meeting was called to order. Professor L. I. Hewes was elected chairman of the meeting and L. M. Baker secretary. Messrs. Shepard and Elwick proposed a program, which was read by the secretary, and considered section by section. Remarks on windbreaks, orchard cultivation and orchard pests were made by Messrs. J. R. Shepard, W. A. Rice, W. D. Challacombe and William Elwick. Transportation facilities were considered, and remarks on this subject were made by Professor L. I. Hewes of Whitman College.

The poor telephone service in the Goodnoe Hills and the lack of any in Sundale was a subject thoroughly gone over at the meeting. On the motion of Mr. Lincoln Heriot the meeting was adjourned until the second Saturday in February.—L. M. Baker, secretary.

Owing to a slight error in the article on "Effect of Freezing on Buds, Bloom and Fruit," published in the December issue, the temperatures given relative to injury to buds during early winter should have read: "In early winter a temperature of 10 degrees below zero is seldom injurious to peach, apricot, sweet cherry or plum buds, but at 15 degrees below zero injury may result, and that perfectly dormant sour cherry and some of our native plum buds are not injured by temperatures as low as 40 degrees below zero."



A second short flax crop keeps linseed oil up, but the increase in price in pure white lead paint is not so great as you may fear.

Get at your dealer's the cost of 100 pounds of "Dutch Boy Painter" White Lead, 4 gals. pure linseed oil, 1 gal. tur-

pentine, 1 pint turpentine drier—this makes 8 gallons of old-fashioned paint.

Compare this cost, either by the gallon or by the job, with what you used to pay for paint.

You'll find the difference so small that you can't afford to put off painting, or to paint with anything except "Dutch Boy Painter" White Lead. Write for free "Painting Helps No. 130

NATIONAL LEAD COMPANY

Offices in the following cities:

New York Boston Buffalo  
Cincinnati Cleveland St. Louis  
San Francisco  
(John T. Lewis & Bros. Co.,  
Philadelphia)  
(National Lead and Oil Co.,  
Pittsburgh)



## BETTER FRUIT

# Crop Specialist Tells How To Make Your Land Pay \$500 To \$1200 Per Acre



That may sound like a story—but I am here to tell, to show and to prove that a profit of from \$500 to \$1,200 per acre is within the reach of every farmer or grower in the country. I have made this remarkable record on my farms for several years—other farmers who have adopted my methods are also succeeding—the same success is within your reach. The secret of this wonderful profit is scientific and intensive farming, special preparation of soil and the growing of special crops.

### Write For My Two Free Books

Book No. 1 is my intensive farming book, not a catalog, published to sell for 50c; send and get it now free; tells of my experiments and experience for the last 32 years. It has taken 32 years to write and to complete it. If you will at least spend 32 minutes reading it it will prove to be the most profitable time you ever spent. This book explains my special method of soil preparation, how to rotate crops, how to make your land pay big profits as I have done by growing my Grandpa's Pride Globe Onions which have produced an average profit of \$15,000 on 40 acres and other special crops.



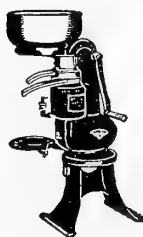
Book No. 2 gives the history of the Alton Improved Red Raspberry which has produced an average profit of \$1,200 per acre on account of its remarkable size, flavor, long fruiting season and vitality.

Write for my books today, they are free and will interest the man who is looking for big profits.

A. O. GILBERTSON, CROP SPECIALIST,  
Box 620  
Mason City, Iowa.

### I Have Farmed For 32 Years

During this time I have experimented, my one aim was to produce special crops that would be out of the ordinary in quality and profit. One of the most successful experiments was with raspberries. Instead of growing the ordinary variety and taking an ordinary profit I propagated a special variety now known as the Alton Improved Red Raspberry that has stood the winters of Northern Minnesota, North and South Dakota and even as far north as Canada without the least winter protection. The Berry is especially remarkable for its size and delicious flavor as well as for its long fruiting season, which on an average extends over a period of three months. If you only have a city lot or if you have a farm investigate this wonderful, large, delicious berry now.



## Simplex Self-Balancing Link Blade Cream Separators

Have you seen the 1910 Model Simplex? Note the solid, heavy frame and the convenient height of both the supply can and the crank. This machine is the result of years of experimental work and has the best features of the 1909 Separator (the Link Blade skimming device, which has been tried and proved its worth as is shown by numerous attempts to imitate, showing that other manufacturers appreciate the skimming qualities of the LINK BLADES and the self-balancing bowl), together with the new low-down supply can and extra heavy base and the ease of running.

The self-balancing feature has been on the market for about two years, and is a perfect success. It does away with the old style mechanically balanced bowl, which had to be sent to the factory to be rebalanced. The ease of running in this machine is not equalled. Note the large skimming capacities relative to prices shown in table:

No.	Capacity per hour	Price
5.....	500 lbs.	\$ 75.00
7.....	700 lbs.	80.00
9.....	900 lbs.	90.00
11.....	1,100 lbs.	100.00

MONROE & CRISSELL

General Agents

Complete Line of Dairy Machinery and Supplies

145 Front Street, Portland, Oregon



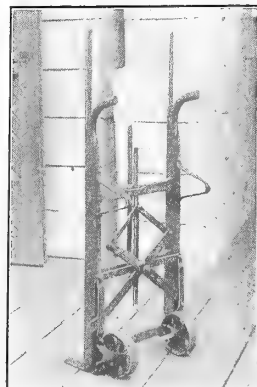
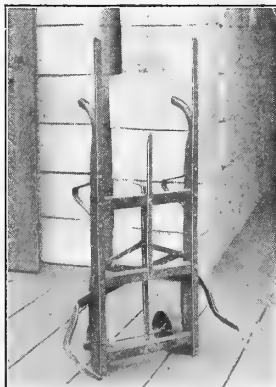
## The PERFECTION CLAMP TRUCK

Patented 1910 in U. S. and Canada

Saves labor, jar and breakage. Indispensable to fruit dealers and growers. Write for circular giving descriptive details and prices f.o.b. Seattle, Portland and Vancouver, B. C.

Manufactured by

SAMSON & ARCHIBALD  
Vernon, B. C., Canada



# "From Office to Orchard"

ADDRESS



A. D. CHARLTON  
ASSISTANT GENERAL  
PASSENGER AGENT  
Portland, Oregon

or

A. M. CLELAND  
GENERAL  
PASSENGER AGENT  
St. Paul, Minnesota

THIS is the title of a unique booklet, in the shape of an apple, containing the true story of a man of family who "broke loose" from the city and "made good" in a Northwestern orchard. It is profusely illustrated and will strike a responsive chord in the breast of every man who has his eye on the future of his loved ones and himself. A request on a postal card will bring the booklet unattended by any obligation, except that of thinking it over.

## Cushman Spraying Machine



This is the GOLD MEDAL WINNER in the Spraying Machine Contest at National Horticultural Congress, Council Bluffs, Iowa, November 10-19, 1910

This is our second experience in carrying off Gold Medal given by National Horticultural Congress for best power sprayer.

The Cushman has carried off highest honors and diploma at every state fair where shown, and never has taken second place in any contest since the first machine went into the apple orchard in 1902.

A few of the reasons why the Cushman scored 74 points better than the next best outfit and more than 150 points better than some of them:

1st. The quality of material used and general construction was found to be superior.

2d. The samples of spray mixture taken from various parts of tank demonstrated that our agitator did the most thorough work. It is also simplest in construction, having no gears.

3d. Every machine was weighed by the judges when empty and again when filled with liquid. Our tank carried 40 gallons more mixture than did any other machine, and yet the draft on team was 32% lighter, as measured by traction dynamometer.

4th. It is best suited for hillsides because the weight is low down and the Schebler carburetor delivers exactly the same mixture to engine on hillsides as on level land.

5th. Our tank was found to be the strongest in construction, lightest in weight and largest capacity.

6th. It was found to be the most economical in consumption of gasoline, consuming at the rate of 2½ gallons in 10 hours with machine working at 200 pounds pressure.

7th. The 300-pound pressure test was accomplished with ease, showing remarkable rigidity of outfit.

For Catalogue and further particulars, address our Western Manager, I. D. CLAPP, with headquarters at Wenatchee, Washington, Branch Office, North Yakima Washington, or CUSHMAN POWER SPRAYER CO., Lincoln, Nebraska



Spray Your Fruit for Codling Moth with  
**Grasselli Arsenate of Lead**  
 IT IS THE BEST

We are now ready to demonstrate the correctness of our statement from a practical standpoint.

We give you the following names and addresses of the winners of the Grand Sweepstakes prize of \$1,000 for the best car of apples shown at the National Apple Show, Spokane, Washington:

1908—M. Horan, Wenatchee, Washington.

1909—Tronson & Guthrie, Eagle Point, Oregon.

1910—C. H. Sproat, Hood River, Oregon.

All sprayed with Grasselli Arsenate of Lead.

Bear in mind that this material was used at three different points, and during three different seasons. Does this not demonstrate to your satisfaction the superiority of Grasselli Arsenate of Lead, both as to locality and climate in which it may be used?

If so, it will not be necessary to ask yourself the question, "What Arsenate of Lead shall I use this season?" You will order Grasselli Brand.

Do not buy Arsenate of Lead on arsenic contents alone. Bear in mind when buying this spray that lead should be given equal consideration with arsenic, because it increases the adhesive properties and reduces to a minimum foliage injury.

**DISTRIBUTERS IN THE NORTHWEST:**

Wenatchee Produce Co., Wenatchee, Washington

Inland Seed Co., Spokane, Washington

Hardie Manufacturing Co., Portland, Oregon

Samuel Loney & Co., Walla Walla, Washington

Missoula Drug Co., Missoula, Montana

Western Hardware & Implement Co., Lewiston, Idaho

Salem Fruit Union, Salem, Oregon

Hood River Apple Growers' Union, Hood River, Oregon

Carlson-Lusk Hardware Co., Boise, Idaho

Darrow Bros. Seed & Supply Co., Twin Falls, Idaho

Rogue River Fruit and Produce Ass'n, Medford, Oregon

And in all consuming districts

Write the above, or

**H. N. LYON, Northwestern Representative**

505 Concord Building, Portland, Oregon,

for name of nearest distributor

**THE GRASSELLI CHEMICAL CO.**

Established 1839

Main Office, Cleveland, Ohio

St. Paul, Minn.

Chicago, Ill., 2235 Union Court

New York City, 60 Wall Street

St. Louis, Mo., 112 Ferry Street

New Orleans, La.

Cincinnati, Ohio

Birmingham, Ala.

Detroit, Mich.

**AS LONG AS YOU'RE GOING TO BUY  
 A POWER SPRAYER, YOU'D BETTER  
 GET THE BEST—A CHAMPION**



**COSTS NO MORE TO BUY THAN ORDINARY OUTFITS AND  
 COSTS A LOT LESS TO OPERATE**

**YOU COULDN'T DO WORSE** than to buy a poor sprayer—you'll pay for it twice over in time lost, solution wasted, and repair bills.

**OF COURSE IF YOU HAD TO PAY MORE** for the best sprayer—which is the Champion—then there might be some reason in saving money and taking a chance.

**BUT THAT ISN'T THE CASE**—the Champion costs actually less than inferior power sprayers of other makes. One reason is, the Champion is simpler, therefore costs less to build and so can be sold for less. Then, too, we make them in large quantities—being the largest exclusive manufacturers of power sprayers in the world, and we give you the benefit of the saving we effect in that way.

**THE SAME SIMPLICITY OF DESIGN** that enables us to make and sell the best sprayer for the price of an ordinary one also makes the Champion the easiest to operate and the most economical.

**SO THERE'S ONLY ONE REASON** why anyone would buy any other power sprayer—he hasn't seen a Champion in operation nor investigated its many superior features.

**YOU OWE IT TO YOURSELF** to get our catalog, study the technical description of this splendid outfit and let us send you the names of prominent orchardists everywhere who are using Champions. The rest will be easy.

**PLEASE REMEMBER THIS**—we are specialists. The Champion Manufacturing Company manufactures only power sprayers. We never have made water pumps nor farm machinery. Sprayers are not a side line with us.

**WE DEVOTE ALL OUR ENERGIES** to making the best power sprayer possible—one that solves all problems in the handling of all kinds of solutions, and does it more easily, quickly and economically.

**ORDERS ALWAYS AHEAD OF SUPPLY.** So send for catalog at once, then order quickly, so as not to suffer delay in delivery. Champion Automatic Power Sprayers are fully guaranteed.

**DO YOU KNOW** the Champion nozzle—the only variable one—does away with towers; sprays the highest branches, or lowest, from the ground; from any point regardless of direction of wind; does a perfect job—and saves half the solution. Look into it.

**The CHAMPION AUTOMATIC POWER SPRAYER**

Department D

PONTIAC, MICHIGAN

WE have just received an advance copy of the January edition of the Fruit Grower, which contains much interesting and valuable information about spraying and other subjects in general. The Fruit Grower is one of the oldest horticultural papers, and has a very large circulation. This edition contains 88 pages, with colored cover, and is very attractively gotten up, and contains

very interesting and valuable information for the fruit grower. The Fruit Grower was originally called the Western Fruit Grower, and by many is still spoken of in this way. A large part of this edition has been given to horticultural interests, with departments on beautifying of the home, house building, a column for home folks, poultry gossip, and so forth. We presume that the Fruit

Grower is extending its field, and will be more general in the future than it has been in the past. This inference is made from the fact that on this letter head is the following paragraph: "Illustrated monthly magazine for progressive American farmers." The Fruit Grower is edited by James M. Irving, with W. G. Campbell as general manager. The Fruit Grower is well worth the subscription price of \$1 per year, and our opinion is that the orchardist takes too few papers instead of too many.

## THE TOOL that SAVES a TOOL

### What Prof. Bailey Says

"The Double Action 'Cutaway' Harrow has been satisfactory. I use it almost continuously on our hard clay land with good results."

Why buy two tools when one will do two kinds of work and do it better and easier? Clark's original "Cutaway" Harrow can be used as a field harrow and its extension head frame converts it into an orchard harrow. Drawn by two medium horses and will cut 23 to 30 acres or double cut 15 acres in a day. The genuine "Cutaway" disk slices, stirs, lifts, twists and aerates the soil. Working the soil this way lets in the air, sunshine and new life and kills foul vegetation. Thorough cultivation makes large crops. Successful farmers, orchardists, gardeners and planters know that intensive cultivation is profitable when done properly.

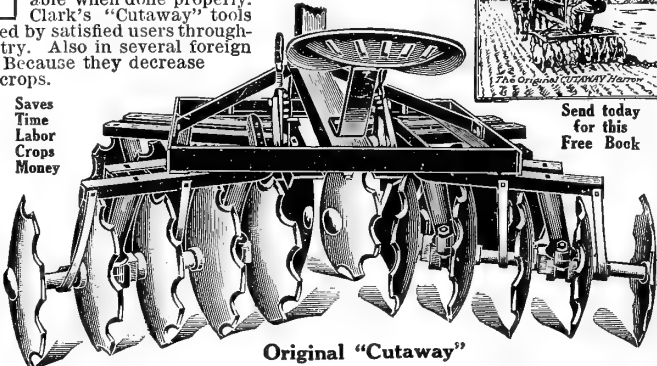
Clark's "Cutaway" tools

are used and endorsed by satisfied users throughout this entire country. Also in several foreign countries. Why? Because they decrease labor and increase crops.

Our disks are made of cutlery steel shaped and sharpened in our own shops and are the only genuine "Cutaway" disks.

Beware of imitations and infringements. We make a tool for every crop. If your dealer can't supply the genuine "Cutaway," write us your needs. Satisfaction guaranteed. Prompt shipments. Send a postal today for our new catalogue "Intensive Cultivation." It's Free.

Saves  
Time  
Labor  
Crops  
Money



Original "Cutaway"

CUTAWAY HARROW CO., 940 MAIN STREET, HIGGANUM, CONN.

Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon

### INTENSIVE CULTIVATION



Send today  
for this  
Free Book

BEES AND FRUIT-GROWING.—The value of bees in the pollination of fruit blossoms is becoming better known each year. Anyone familiar with the growing of fruit and also in touch with the bees as pollinators would not dispute the great help that bees are in the production of a generous crop of fruit. Fruit-growing and bee-keeping are two industries that combine very nicely. The American Bee Journal, now in its fifty-first year, is not only the oldest bee paper in America, but its contents each month are the very best that can be had in its field. It is published by George W. York & Co., 117 North Jefferson Street, Chicago, Illinois, at \$1 a year. Its publishers also are headquarters for everything in the bee literature line. Our readers should be interested in the keeping of bees, not alone on account of the excellent food product produced, but in order that they may have the benefit of the work of the bees in pollinating fruit blossoms. In order that you may know just what the American Bee Journal is, we would suggest that you send for a free sample copy to its publishers.

The American Well Works requests us to make the announcement that they use the Westinghouse pump for the reason that they have received best results, all things being considered, by using Westinghouse motors.

### HARVEY BOLSTER SPRINGS



GUARANTEED

# The FAMOUS REX SPRAYS

REX LIME AND SULPHUR SOLUTION, the original concentrated preparation for spraying fruit trees and for animal dip.

This article has been on the market for some eight years and wherever used throughout the United States has given universal satisfaction. It has always been recognized as the highest standard of commercial solution. Because some of our imitators have succeeded in making a concoction that gives a fair Beaume test is by no means a sign that they have the merit that Rex has. We quote the following from the Michigan Experiment Station, Chemical Division:

Mr. W. S. Pullen, Hillsdale, Michigan.

Dear Sir: I send you herewith the results of our analyses of the three samples of spray mixture which were brought to this laboratory by Professor Eustace of the horticultural department:

	No. 1	No. 2	No. 3 Rex
	Lab. No. 2488	Lab. No. 2489	Lab. No. 2490
	Per cent	Per cent	Per cent
Total sulphur .....	14.61	17.40	26.23
Total lime (CaO) .....	6.32	7.93	10.38
Sediment .....	16.59	12.90	.....
Beaume .....	34.4	34.2	33.

As the insecticidal value of the lime and sulphur solution is without question due to the amount of sulphur combined which goes into solution, you will readily see that the REX solution is equal in value to one and one-half times as much as Solution No. 2, and one and eight-tenths more than Solution No. 1. The large amount of sediment in Solutions 1 and 2 would of course lower their efficiency. I will send you a report of the arsenate of lead in a few days.

P. S. (By W. S. Pullen): Samples 1 and 2 were home-made, and we had a good plant.

Yours very truly,

W. S. PULLEN.

This proves that the analyses of this state official bulletin shows that Rex will stand from 10 to 60 per cent greater dilution than any of these brands, and shows that the directions for Rex are right and that every one of the others is wrong. This also shows that Rex at the same price per barrel is from 10 to 60 per cent cheaper than the others.

## REX ARSENATE OF LEAD

We are also prepared to furnish our customers with the highest grade of Pyro and Ortho Arsenate of Lead, having the following guaranteed analysis:

Over 15 per cent arsenic oxide; not more than 50 per cent moisture, and less than one-half of 1 per cent soluble arsenic. The facts are, that Rex Arsenate of Lead averages over 16½ per cent arsenic oxide and less than one-quarter of 1 per cent soluble arsenic. So you see that this is far better than what is required in the federal insecticide law.

FOR INFORMATION AND PARTICULARS ADDRESS:

California Rex Spray Company  
Benicia, California

Yakima Rex Spray Company  
North Yakima, Washington

Wenatchee Rex Spray Company  
Wenatchee, Washington



## TELEPHONE

THE telephone is primarily for business. All fruit growers have more or less business to transact by telephone, and we should be considerate of other people's rights. Complaints are many on the part of fruit growers, particularly those on party lines, with reference to the indiscriminate use of the telephone for lengthy conversations on subjects of no importance whatever. A person is certainly justified in making a complaint when they have important business transactions to make over the telephone to be compelled to wait ten or fifteen minutes, as is often the case, to listen to a lot of idle chatter. We do not feel that social matters should be eliminated, but it seems proper courtesy to other people on party lines to at least confine these conversations to a limited length of time. The use of the telephone has been abused in a great many ways. In large cities the abuse has become so great that in many offices it became absolutely necessary to forbid the use of the telephone for any other purpose than business. We hope that we will not be misunderstood and we believe this suggestion, if adhered to by everyone, will result in more satisfactory telephone service for everybody on all lines.

◆ ◆ ◆

Editor Better Fruit:

Your December number reached me today, and allow me to say that (possibly with the exception of the fruit packing number) you never put out a better number. Your articles on tree planting and pruning are worth their weight in gold.—Respectfully, C. B. Davis, Minneapolis.

THE Thirty-second biennial session of the American Pomological Society will be held in Tampa, Florida, on February 10 and 11, 1911, not on January 31, February 1 and 2, as announced. The society is accepting the invitation of the Florida Horticultural Society and the Tampa Board of Trade, who are to be hosts on this occasion. The date has been changed to take advantage of very much reduced rates from all points north and west of Ohio and Mississippi River gateways. These reduced rates are on sale on Tuesday, February 7, and through tickets may be purchased to the South based on rates from these river gateways, covering a twelve-day period. In New England and the Northeast the winter tourist rates are the only rates available.

This has been practically arranged. Full details will be issued a little later. Prominent among the subjects to be discussed are fruit storage and transportation problems by experts of the United States Department of Agriculture, apple growing on hill land in the South, co-operation in the marketing of fruits, the latest on fungicides and insecticides, nut culture. Of the sub-tropical fruits, the orange, pomelo, fig and pineapple will receive special attention. These subjects will be treated by recognized authorities. The fruit interests of the South and Southwest will have full consideration.

The Tampa Board of Trade is making elaborate preparations for the entertainment of the visiting pomologists. Excursions by automobile, by boat, train and trolley, designed to show Northerners interesting features of Florida and her products, are being scheduled. An exhibition of Florida fruit and vegetables will be held in Tampa at the same time.

This notice is now presented for the purpose of urging each member to make plans for a brief vacation in the South. He should also interest his neighbor fruit grower in the same project, for the meeting will be one of profit as well as pleasure.

◆ ◆ ◆

Editor Better Fruit:

I want to thank you for the work you did when you issued, in September, 1906, the special packing number of "Better Fruit." Little I thought when I had the pleasure of first studying the styles and ways of apple packing that at this date I should be the proud winner of the silver medal awarded by the management of the First Canadian National Apple Show for the best packed box of apples in competition against twenty-three competitors, some of whom came from the largest apple growing section of the West.—Yours very truly, J. Wm. Cockle, Kaslo, B. C.

Editor Better Fruit:

I am writing you at this time relative to your publication. Last year I had some correspondence with you relative to placing our Horticultural Reading Room on your complimentary mailing list. We have received two or three copies during the last year; the others have not come. We should be glad to have you continue to send us your magazine regularly, as we consider it one of the very best publications in America on the subject of fruit growing. I trust that we may be favored by you in this respect.—Very truly yours, James G. Moore, Madison, Wisconsin.

◆ ◆ ◆

A prominent nursery firm, replying to a request of a customer for information, says: "Replying to your favor of the 30th, asking for a guide on trimming young apple trees planted one year, we suggest our Year Book will give you some information. We can also furnish you one of the Brother Jonathan booklets on pruning, but one of the best things of the kind we know of, and timely, is the "Better Fruit" Magazine, Hood River, Oregon, which shows apple from the time of planting to full orchard development, each stage, season by season. Editor Shepard is a practical orchardist, who made Hood River what it is, and any number of "Better Fruit" is worth more than the subscription price. You will make no mistake in subscribing for such publication because it tells you all about spraying, grading and marketing, and everything of interest—valuable, invaluable."

IRRIGATE THE ORCHARD  
WITHOUT PUMPING EXPENSE

## RIFE RAMS

Pump water automatically day or night



The first cost is low, there's no operating expense. Raises water 30 feet for every foot of fall. Fully guaranteed.

If there is a stream, spring or pond within a mile, write for Free Plans, Free Book and Free Trial Offer.

**RIFE ENGINE CO.**  
2525 TRINITY BLDG., NEW YORK

**ACID BLAST ETCHED PLATES**

*We have installed the only etching machines in the State of Oregon*

*Blast etched cuts have a printing quality which has never before been obtainable with process engraved plates . . . . .*

THEY COST THE SAME AS THE OTHER KIND

**WE MAKE CUTS THAT PRINT**

**HICKS - CHATTEN ENGRAVING CO.**

607 BLAKE-McFALL BLDG., PORTLAND, OREGON

# J. W. Baltes & Company

## invite your inquiries for Printing

SPECIALISTS IN THE ARRANGING AND EXPEDITING OF FINE WORK

Corner of First and Oak Streets Portland, Oregon

**WESTERN FRUIT JOBBERS' ASSOCIATION'S** seventh annual convention will be held in the City of Sacramento, California, February 15th to 18th, 1911. Associated with the Western Fruit Jobbers will also be the National League of Commission Merchants, with a membership of about 700 firms, and the International Apple Shippers' Association, with a membership of about 400 firms. These, together with the Fruit Jobbers' 500 firms, will give a total of 1,600 of accredited firms that will convene at this time. It is to assume that because of the number of accredited representatives from each of these firms that at least 1,500 delegates will be present.

From Eastern advices it is confidently expected that 1,500 delegates will be present.

The publicity committee has been sending out 3,500 pieces of advertising matter per week for the last four weeks, each cartoon being suggestive of some phase of the proposed California entertainment.

The officers of the association are: John M. Walker, Denver, Colorado, president; Wm. N. Roylance, Provo, Utah, first vice-president; Geo. G. Grupe, Cedar Rapids, Iowa, second vice-president; J. E. Stewart, St. Louis, Missouri, third vice-president; E. H. Royer, Des Moines, Iowa, treasurer; W. D. Tidwell, Denver, Colorado, secretary; W. H. J. Kavanaugh, Chicago, Illinois, sergeant-at-arms.

Directors: John M. Walker, Denver, Colorado, president; W. M. Roylance, Provo, Utah; Geo. G. Grupe, Cedar Rapids, Iowa; J. E. Stewart, St. Louis, Missouri; Joseph Grainger, Lincoln, Nebraska; E. H. Emery, Ottumwa, Iowa; Samuel E. Lux, Topeka, Kansas; C. B. Bills, Sacramento, California; E. E. Merrill, Minneapolis, Minnesota; Geo. W. Gees, Kansas City, Missouri.

Committees in charge of the convention are: F. B. McKevitt, Sacramento, California, chairman; A. L. Crane, Sacramento, California, chairman publicity; G. X. Wending, San Francisco, California, chairman transportation; Geo. W. Peltier, Sacramento, California, chairman entertainment; John Ing, Sacramento, California, chairman press; Fred L. Martin, Sacramento, California, chairman financial; C. B. Wilmarth, Sacramento, California, secretary of the convention.

The present program thus far arranged is as follows: Wednesday, February 15th: 8 p. m., official opening of convention; 9 p. m., reception of ladies at Crocker Art Gallery. Thursday, February 16th: 9 a. m., opening of morning session of convention; 1 p. m., afternoon session of convention; 2 p. m., card party for the ladies; 7:30 p. m., banquet; 9 p. m., dance. Friday, February 17th: 9 a. m., morning session of convention; 1

p. m., afternoon session of convention; 2 p. m., luncheon for the ladies; 8 p. m., jobbers' official evening at Northern California Citrus Fair and auction of exhibits; 10 p. m., jinks at Elks' Temple. Saturday, February 18th: 2 p. m., trip to Folsom; 8 p. m., theater party. Sunday, February, 19th: Daylight trip down the river to San Francisco.

As additional means of enlightenment and entertainment of the Eastern visitors, the California committee has arranged to hold a fair to be known as the Northern California Citrus Fair, during the entire week, February 13th to 18th. This fair will contain ten departments, namely: Citrus, dried fruits, olives and olive oil, almonds, raisins, wine, apples, truck produce, flowers, specials.

The new Studebaker Building on the corner of Eighth and L, situated in the exact center of the business part of town, has been selected in which to hold the fair, and two floors secured. This building has just been completed. The committee has succeeded in persuading the Studebaker Co. to withhold in warehouse a portion of their stock until after the fair is over.

Great interest is being taken in the proposed fair. This is practically the first organized effort that has been made in California to bring the producer and packer in direct touch with the man that markets or buys his crop.

Six excursions will be running to Sacramento by the Southern Pacific Co. The Western Pacific and Santa Fe will run three. The Northern Electric and California Traction Co. are working earnestly in the advancement of the fair, and the advertising will be very general. At least 325 Western newspapers are devoting space to this convention and fair.

One feature that will be brought out by the exhibits in the citrus department will be the great range and length of the citrus belt of Northern California. No exhibits in the citrus lines will be accepted south of the Tehachapi, and starting with the Porterville, Lindsay, Exeter and Dinuba districts, and then jumping to Mt. Campbell, Sanger and Fresno, then showing products of Fair Oaks and Newcastle, then further north to Oroville, Thermalito and Palermo, and finally reaching the upper end of the citrus belt, to Corning and Red Bluff, a distance of over 400 miles due north and south, has been covered. The most southern point shown in these exhibits is 210 miles north of the City of Los Angeles. If further evidence were needed to show the wonderful range of the California citrus belt, it will only be necessary to call attention to the fact that an exhibit will also be in evidence from Cloverdale, which is situated in the extreme northern portion of the

in the coast range west of the Sacramento Valley. Sonoma Valley, a beautiful little valley situated in the matter of decorations, as little bunting as possible will be used. Beautiful effects can be worked out with oranges, clustered raisins and ferns. Over five tons of clustered raisins alone and a carload of oranges have already been obtained for this purpose. No better way can be imagined to impress visitors with the great wealth

## Lilly's BEST SPRAY BOOK

This is the book every fruit grower and farmer needs. It is complete in every detail including an absolutely scientific Spray Calendar with diseases and insects illustrated and described.

### HAND AND POWER Spray Machinery

Tested sprays and insecticides are all included together with prices, illustrations and full descriptions. Lilly's Spray Book is a practical guide. Send for it—free to those asking. **Chas. H. Lilly Co.,** Seattle.



## COOPER'S SPRAY FLUIDS

### Read what Hood River says

Hood River, Oregon, November 27, 1909.  
This is to certify that I have used Cooper's Tree Spray Fluids, VI, for killing San Jose scale and found it very effectual.

G. R. Castner, County Fruit Inspector.

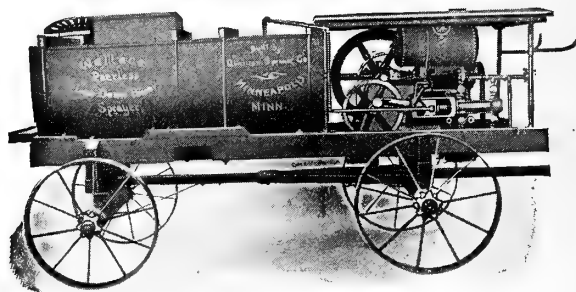
### APTERITE THE SOIL FUMIGANT DESTROYS INSECTS IN THE GROUND

REDUCES LOSSES SAVES PROFITS  
IT WILL PAY YOU TO INVESTIGATE  
Write for 1910 booklet (32 pages)  
Testimony from fruit growers  
everywhere

Agent:

**C. G. ROBERTS**  
247 Ash Street Portland, Oregon  
Sole Manufacturers:  
**William Cooper & Nephews**  
CHICAGO, ILLINOIS

## Wallace Peerless Power Sprayer



### PROVEN BEST BY EXPERT TEST

In design, construction, and economy of operation, the PEERLESS spraying outfit is without a peer among power sprayers.

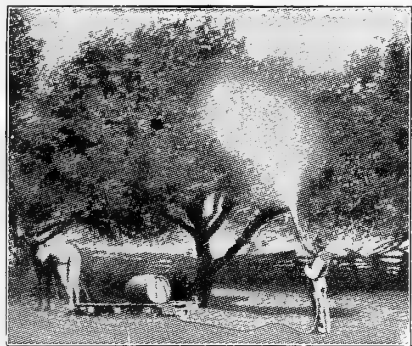
Equipped with our patent pressure regulator, insuring steadiness of pressure, and our new design rotary agitator insuring adequate agitation of spraying mixtures.

Write for Descriptive Catalogue

**AMERICAN SPRAYER COMPANY**  
Minneapolis, Minnesota

and volume of these products than to see them in this manner.

Many new and novel features will be introduced in the displays. For example, the state commissioner of horticulture has arranged to prepare an exhibit of citrus trees in tubs, upon which the beneficial insects that are bred at the State Insectary will be placed at work. These insects will be confined to the special tree to which they belong by glass "cages."



## The Best Spray Pump

Sprays the tallest fruit trees from the ground. Special nozzle for grape vines, shrubs, etc. Sprays quickest and best. Does the work in half the time and does it thoroughly. Always ready. Used with bucket, barrel or tank. Lasts a lifetime. No leathers to dry up, wear out, or make trouble.

## Standard Spray Pump

Warranted for 5 Years. Price \$4.00.

It will not cost you a cent to try it. Our special offer gives complete details. Write for it today and we will also send our illustrated circular showing how this pump pays for itself many times over the first season.

**The Standard Stamping Co.**  
204 Main Street Marysville, O.

The United States Plant Introductory Garden at Chico, the only thing of its kind in America, will exhibit a novel exhibit of tree plant life, which will interest the Eastern visitors.

Luther Burbank, the world's greatest horticulturist, will exhibit some of his wonderful creations. Professor McAdie, in charge of the Pacific Coast department of the United States Weather Bureau, will install and operate a miniature weather bureau, showing the method of advising the orchardists of approaching climatic dangers.

In the flower department the exhibit of Camellias, Sacramento's official flower, which blooms at that season of the year, is bound to attract attention of the visitors from the frozen East.—Contributed.

◆ ◆ ◆

Spokane, Washington, October 3, 1910.

Editor Better Fruit:

We note your favor of the 29th ult., and certainly admire your enterprise in putting out a production like the September issue of "Better Fruit" at a cost of 25 cents, and the other eleven issues of the year practically as good, and supply them all for the nominal subscription price. We hope you will win out in the end.

Yours very truly,  
Washington Mill Company.

◆ ◆ ◆

Toppenish, Washington, September 23, 1910.

Editor Better Fruit:

Your September issue is just before us, and as usual, it is strictly up-to-date. The special packing information is certainly worth far more than the cost of a year's subscription. No fruit grower can scan this issue without being made a far better fruit grower by so doing. Yours very truly,

Washington Nursery Company.

◆ ◆ ◆

Editor Better Fruit:

I wish to take this opportunity to say that your magazine is doing more to advertise the West and scientific farming than any other publication, and is attracting the attention of a higher class of people to fruit culture.

I consider your wonderful magazine a necessity to the home of the fruit grower, and look forward for every issue.—Very respectfully, Edw. F. Morgan, Seattle.

◆ ◆ ◆

Editor Better Fruit:

I am this a. m. in receipt of your November issue of "Better Fruit," and am so well pleased with same that I am enclosing a list of live people that if you care to mail one as a sample copy I feel that it will prove of benefit all around.—Yours most sincerely, Robert W. Reist, Portland.

VARIETIES OF FRUIT on ten-acre orchard of C. H. Hughes, in Pajaro Valley, California: Apples, peaches, oranges, Pondusa lemons, persimmons, ju juby, custard apple, kai apple, eugenia pitanga, guava lucidum, haiephy plum or kaffir plum, pears, quinces, lemons, limes, olives, loquat, strawberry guava, carissa grandiflora, rose apple, guava gunienas, apricots, prunes, grape fruit, figs, ponderosa lemons, mulberries, avocado or alligator pear, casimiroa edulis, feijoa sellowiana, pomegranates, nectarines, cherries and plums. The nuts are English walnuts, black walnuts, butternuts, almonds, chestnuts, pecans, filberts and the macadamia ternifolia or the Queensland nut.

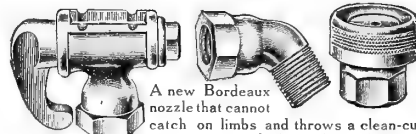
◆ ◆ ◆

Editor Better Fruit:

Your notice that my subscription to the "Better Fruit" has expired received and noted.

Enclosed please find money order to you for \$1.00 to pay for another year's subscription. We are much in love with the "Better Fruit." Nothing like it in fruit publications. If the West does not make good it will be no fault of yours.—Respectfully yours, Lot L. Feltham, Weiser, Idaho.

## UP-TO-THE-MINUTE SPRAYING SPECIALTIES.



A new Bordeaux nozzle that cannot catch on limbs and throws a clean-cut spray; no ragged edges. An angle-crook that directs spray any angle. A round-spray nozzle that throws a solid cone instead of a hollow one and hits the center, not all around it. Special introductory price to growers. Agents wanted.

## CROWN SPECIALTY CO.

LOCK BOX, 297. CHICAGO

Sales increase yearly; orders duplicated; satisfied users. World's leading all-metal, finest, longest, widest two-spray NOZZLE. Cleaned while using. Twenty-eight years' experience. Inventor built first in U. S. A. Circular?

## Nesbar Nozzle Co.

Dept. O Elmira, New York

# THE BECK POWER SPRAYER

Some reasons why you should use a BECK POWER SPRAYER

**First**—The wide range of capacity possible to secure from the "BECK" line. Our smallest outfit, No. 200, is our Duplex pump and 2-h.p. engine, and has a capacity of 7 gallons of solution per minute. Our Duplex outfit No. 203 has a capacity of 9 gallons per minute and will supply six large round angle nozzles. No. 300, our Triplex outfit, will supply eight angle nozzles with a capacity of 12 gallons per minute. The largest power outfit manufactured is our Triplex No. 304, with a capacity of 15 gallons per minute.

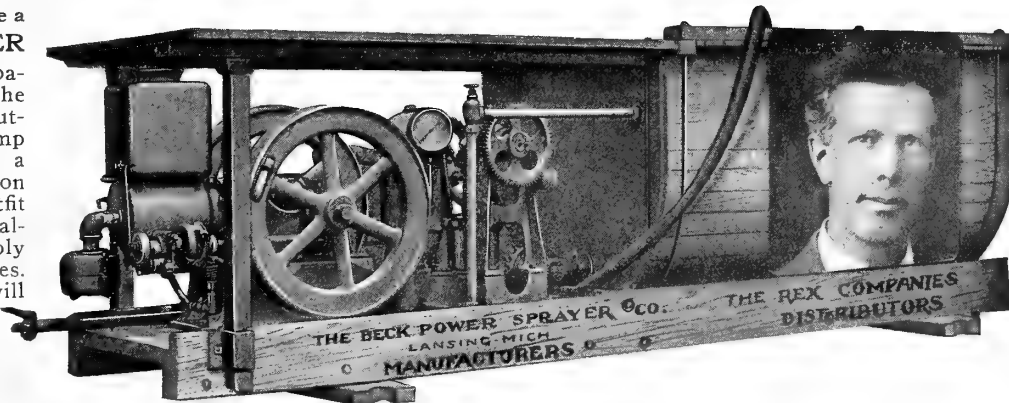
This machine will supply four open bordeaux nozzles at 300 pounds pressure. **Second**—We are the first firm to manufacture a line of pumps that will maintain an actual working pressure of 300 pounds. You know that this means more rapid work, and an economy of spray solution that can be obtained in no other way. No danger of breaking the pump, for it is tested to withstand a pressure of 500 pounds before it leaves the factory. The balance of the waterways with the displacement of the plungers and the passage capacity of the valves makes the pumps absolutely free from air cushions, and means that a rapid development of a steady high pressure is always possible.

**Third**—We had the only outfit at the National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910, that could and did take the 30-minute test at a pressure of 300 pounds. In this test the "BECK" was the only machine that ran the full time of the trial without a stop or engine trouble, and it led its class by a score of 15 points over its nearest competitor, in capacity and general operation—the important features of a power outfit.

Mr. Grower, we know that you will want real reliability in your outfit, and we ask for a careful investigation of our machines.

WRITE FOR CATALOG AND PRICE LIST, MENTIONING "BETTER FRUIT"

THE BECK POWER SPRAYER COMPANY, Lansing, Michigan



*Editor Better Fruit:*

Upon receipt of the first copy of the December edition of "Better Fruit" I telegraphed you in regard to correcting the error that appeared in my article. While this may be no serious mistake, and could hardly lead anyone astray, it will sound rather ridiculous to some of my horticultural friends, for they realize that fruit buds are never injured by the temperatures which appear in the early part of my article as regarding winter injury to buds.

I will admit that the matter may have been stated rather awkwardly in my manuscript, but whoever is responsible for the change in the reading of the material surely came a long way from making it read as I wished it to read. In the manuscript, I believe, the temperatures mentioned were, respectively, -10, -15 and -40. This is quite different from 10, 15 and 40 degrees below freezing.

When I telegraphed you, I thought it would be possible to mark the error before the mailing list was sent out, but possibly it was too late for this. Of course mistakes will happen, and I hope you will make note of the error in the next issue.—Yours very truly, O. B. Whipple, Horticulturist, Bozeman, Montana.

## HEADQUARTERS FOR CENTURY SPRAY PUMPS

Hose, Nozzles, First-  
class Plumbing Supplies

**C. F. SUMNER**  
Successor to Norton & Smith  
HOOD RIVER, OREGON

## WHY MAR THE BEAUTY OF THE LANDSCAPE?

**L**AST summer the editor of "Better Fruit" made a trip to Niagara Falls to visit the International Apple Shippers' Association. On looking out of the car windows throughout many of the middle West and Eastern states, both sides of the farmers' barns were painted with great big ugly signs advertising one thing or another. Great big signboards dotted the country here and there, adding nothing—in fact, detracting much from the beauty of the landscape. The editor is pleased to say that these barn signs are not so general throughout the Northwest, and that big, long signboards are less conspicuous.

It is not our policy to dictate or to interfere with anybody's business, but sometimes we cannot refrain from suggesting things, and I believe that our Civic Improvement Clubs will agree that the thought suggested by this article is well worthy of consideration.

"Better Fruit" wants to see the home grounds improved with flowers, and the buildings attractively painted, but not disfigured with ugly signs. Let us add to nature if we can, but not mar its beauties.

♦ ♦ ♦

*Editor Better Fruit:*

A preacher would make a great mess of it trying to preach without a Bible, and, as the Irishman would say, "Be the same token." I can't carry on my business without your valuable paper, "Better Fruit," so please accept the enclosed \$1.00 and continue to keep me on your mailing list. Please change address from R. F. D. No. 8 to 418 South Lincoln Street, Spokane, Washington.—Respectfully yours, J. L. Reynolds, Spokane.

COMPLYING WITH THE INSECTICIDE ACT OF 1910  
IT WILL PAY YOU TO USE EITHER

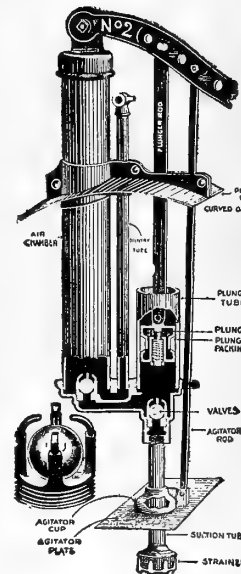
**SPRAY ARSENATE OF LEAD**  
PASTE OR POWDERED  
FOR ALL LEAF EATING INSECTS  
RESPONSIBLE DISTRIBUTORS AND AGENTS WANTED

**KEY BRAND**  
RIGHT PRICE AND MATERIAL  
FUNGICIDE AND INSECTICIDE  
USE

**BORDO LEAD**

**INTERSTATE CHEMICAL CO.**  
11 BAYVIEW AVE., JERSEY CITY, N.J.  
WRITE FOR PRICES, CIRCULARS ETC. CORRESPONDENCE SOLICITED.

## With Hand Spramotors



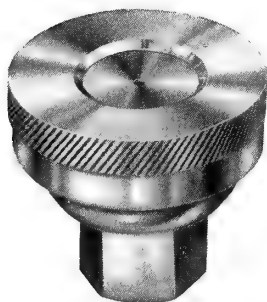
Mr. Leigh, superintendent, put 40 tons (80,000 pounds) of cold water paint on the N. Y. C. stock yards, Buffalo, New York. When these wonderful hand machines give such excellent satisfaction for big jobs, don't you believe they will do your work well? The Spramotor is guaranteed. In all sizes, for painting, whitewashing, vineyard, weed destruction, orchard and row crops. Tell us what you want the Spramotor for, and we will send you an interesting booklet of 88 pages.

**R. H. Heard**  
1335 Erie St.  
BUFFALO, N. Y.

# Scientific Spray Nozzle

PATENTED APRIL 16, 1907

FOR SPRAYING FRUIT TREES, SHADE TREES, ETC.



Nozzle

### MADE IN BOTH BRASS AND ALUMINUM

With hard rubber spray directing disc, which is guaranteed to withstand all kinds of chemicals and wear two years. This nozzle fits any spray rod, throws a strong, penetrating spray, but does not drench.

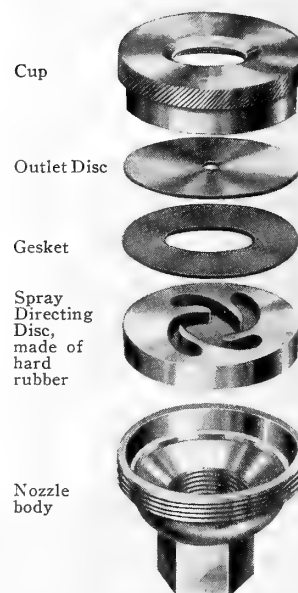
### DOES THE WORK OF FOUR NOZZLES AND DOES IT BETTER

And pays for itself in a few hours by saving of spray materials and thorough application of the spray. Secretary C. E. Bassett of Michigan State Horticultural Society says: "We have used the scientific spray nozzle on our farm, and believe it to be the best one used by us, and we have had a good many of the leading kinds. It excels both in the amount of material thrown and the way in which the spray is distributed."

Price \$1.00 postpaid. Money back if not satisfactory after fair trial. A brass ell will be sent for 25 cents additional, with which the nozzle may be placed on the rod at an angle of 45 degrees.

Special prices in dozen lots or over. Live agents wanted.

Write today for catalog and prices on our entire line of Niagara Brand Lime-Sulphur Solution, Niagara Brand Arsenate of Lead, Bordeaux Mixture, Tree Borer Paint, Sulphur, Compressed Air Sprayers, and Gasoline Power Sprayers, Hand Pumps, Nozzles, Spray Rods, Hose and Fittings.



**NIAGARA SPRAYER COMPANY** 201 Main Street, MIDDLEPORT, N. Y.





## HIGHEST PRICES FOR YOUR APPLES

**T**HAT is what you are after, and there is only one way to command them—grow perfect fruit. There is one way to insure perfect fruit—spray your trees at the exact and proper time with the **right** spray. The very best you can buy, even if you have to pay a higher price for it than you do for inferior brands. A few extra cents put into a perfect spray will net several dollars in the apple yield. Use a spray that has been proven of the very highest efficiency, and has been adopted by the Apple Growers' Union of Hood River—Niagara Brand Lime-Sulphur Spray.

**A**RSENATE OF LEAD kills leaf-eating insects. You can mix Arsenate of Lead with your Lime-Sulphur and do two sprayings, so to speak, with one operation. The

best Arsenate of Lead you can buy is Niagara and Triangle Brands. They have proven their worth, and have been accepted as without a peer by highly successful Northwest orchardists. Lime-Sulphur Spray is handled exclusively in Hood River by the Apple Growers' Union.

**A**T reasonable prices, consistent with thorough and excellent operation, we will make contracts with orchardists to attend to all of their spraying. We are exclusive selling agents for Bean spraying machinery. To those interested in the value of sprays and in knowing when to spray, etc., etc., we will send free of charge our booklet, "Successful Spraying." Send name and address to

## Hood River Spray Mfg. Co.

309 Failing Building, Portland, Oregon



# Something you should know about Arsenate of Lead

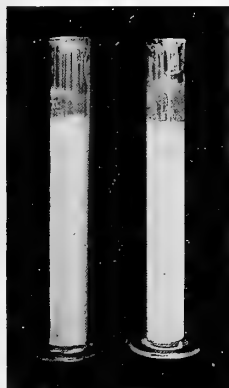


Fig. 1

**A**LL Arsenate of Lead which meets with the various Government requirements is not of the same kind. There are two distinct forms of Arsenate of Lead, and the object of this advertisement is to show to the grower the difference between these two and enable him to make an intelligent selection of the kind best suited to his needs.

Neutral Arsenate of Lead is composed of arsenic and lead and prepared in such a manner that all the arsenic is thoroughly combined with lead. This material is very light in gravity, settles very slowly in water, is fluffy and holds a large amount of water and when sprayed on foliage clings very tightly to it. On account of its fluffiness it has great covering power, and because the arsenic is thoroughly combined with lead it does not change its composition on exposure to the weather and so will not burn the most delicate foliage.

The second material is the acid Arsenate of Lead, in which only two-thirds of the arsenic is combined with lead, the other third being very loosely combined so as to form a precipitate which is insoluble in water at first, but which on exposure to the weather begins to disintegrate and give free arsenic, which will severely burn tender foliage. This material is much heavier in gravity, not so fluffy, will not hold as much water, settles much more rapidly in a spray mixture, and does not cover the area of foliage so thoroughly on account of its greater density. Such a material is suitable for

spraying forest or shade trees where foliage injury is not quite so important, but it is not adapted for spraying delicate fruit trees.

The photographs in this article illustrate the difference in the two forms of Arsenate of Lead: one is Sherwin-Williams New Process Arsenate of Lead, which is the highest type of an absolutely neutral, thoroughly combined lead arsenate, and the other is one of the typical brands of acid Arsenate of Lead offered in competition at a much lower price, which shows very clearly the defects common to this form of Arsenate of Lead.

In the illustration shown by Fig. 1 we have a picture of these two forms of Arsenate of Lead stirred up in water and allowed to settle for fifteen minutes. The same quantity of paste is used in each case and diluted to the same total volume with water. Fig. 2 shows them after they had stood over night and settled all they could.

After thoroughly settling, the bulk occupied by a given quantity of S-W New Process Arsenate of Lead is approximately 45 cubic centimeters, whereas the competitive material, in the acid form, is 20 cubic centimeters, showing two and one-quarter times the bulk for New Process Arsenate of Lead.

The facts given above plainly show the inadvisability of the orchardist using the cheaper grades on the delicate foliage of his fruit trees. There's no need to take chances. Use the best.



Fig. 2

## A TEST OF TWO DROPS

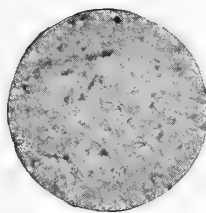


Fig. 3

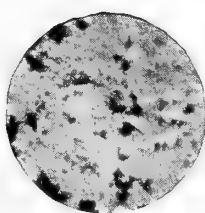


Fig. 4

Figs. 3 and 4 are micro-photographs magnified 30 times of a drop from each of these solutions stirred up and placed on glass. Fig. 3 shows that New Process Arsenate of Lead covers a given surface more thoroughly than the acid material, leaving no spaces between the particles. We also found that when dry the acid solution rubbed off the glass much easier, showing its adhesive qualities were not so good.

For the Horticulturist and the Fruit Grower there isn't a better spray than Sherwin-Williams New Process Arsenate of Lead. Send for prices on your Spring requirements.



## THE SHERWIN-WILLIAMS Co.

MANUFACTURERS OF HIGHEST GRADE INSECTICIDES AND FUNGICIDES

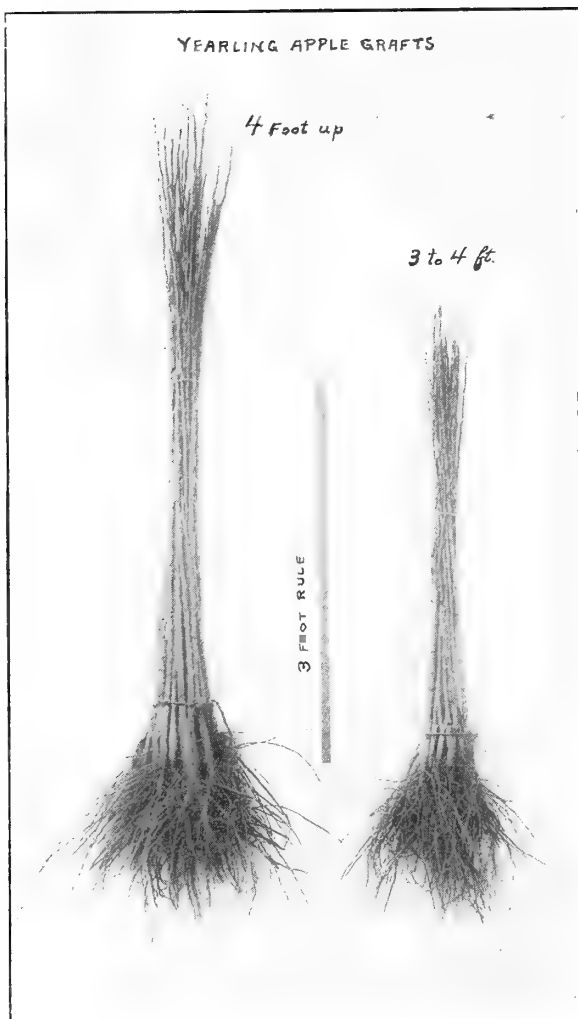
MAIN OFFICE---707 CANAL ROAD, CLEVELAND, OHIO

This valuable 120-page Book,  
"Spraying—A Profitable Investment,"

SENT FREE



## There's the Stock



These are the type of apple trees shipped in fall of 1910 that call forth such remarks as you see here.

"SEE THE ROOTS"

## Here are Some Comments



Mica, Washington, November 5th, 1910.—A. H. Hoeft: "The consignment of trees arrived today in good condition. I set day of delivery for November 9th at the Chicago Ranch, one mile north of Mica. Trees are the best I ever saw, and I have sold and delivered a good many trees before."

Enaville, Idaho, November 19th, 1910.—Gust Hagman: "I am fully satisfied with the trees."

Newport, Washington, November 5th, 1910.—C. L. Ford: "Trees are excellent—the best I've seen. Thanks."

Dicks Landing, Washington, November 7th, 1910.—B. F. Bray: "Trees arrived today in good condition. Thanks for your square deal."

Liberty Lake, Washington, November 8th, 1910.—W. A. Mackenzie (Spokane Bridge): "Trees arrived today in good condition. Well pleased. They look fine."

Winthrop, Washington, November 6th, 1910.—Fred Hanny: "The trees I got last year are doing fine."

Laclede, Idaho, November 12th, 1910.—G. W. Dawson: "Trees were fine. Am well pleased. Thanking you for your kindness."

Yamhill, Oregon, November 14th, 1910.—Morris & Graft: "Never saw better trees of their age from any nursery."

Bremerton, Washington, November 21st, 1910.—R. J. Henderson: "Am very highly pleased with the trees."

Portland, Oregon, November, 1910.—Geo. W. Wilson: "I consider this shipment the finest lot of trees I have ever seen. Several fruit growers of that section (Yamhill, Oregon) examined them very carefully, and undoubtedly reached the same conclusion. We compared this shipment with others, and I must say there was not much comparison. The other shipments you sent to Yamhill are giving great satisfaction, and I think you have a foothold in what is bound to be one of the largest and finest fruit growing sections of this country."

Payette, Idaho, November 30th, 1910.—C. J. Hansen: "I find the trees in fine order, and Mr. Kimbal said the best roots he has seen."

Independence, Oregon, December 2nd, 1910.—John Dickinson: "My shipment of trees arrived in good condition. They are just fine stock, and are entirely satisfactory."

Seattle, Washington, November 30th, 1910.—Levi Wright: "I opened the box at West Seattle yesterday morning and found everything in good condition. I do not know how the packing could have been excelled."

Seattle, Washington, December 3rd, 1910.—Eva Binkman: "I am well pleased. Nice trees. Just what I wanted."

Post Falls, Idaho, December 17th, 1910.—L. W. Pietsch, R. F. D. No. 1: "The stock we bought of you last year has done splendidly."

Gooding, Idaho, December 19th, 1910.—T. J. Marcum: "Splendid trees. They are the best rooted trees in their sizes I ever saw. Can't be duplicated anywhere."

Bridgeport, Washington, July 8th, 1910.—J. H. Hess: "The trees I planted this spring, bought from you, are the finest stand I ever saw."

Naples, Idaho, September 19th, 1910.—Wm. B. Roberts: "Your stock was the best in shape and condition of any I have ever purchased."

Kennydale, Washington, August 29th, 1910.—E. Dahl: "The nursery trees I purchased from you are doing fine, and I am well pleased with them."

Renton, Washington, August 28th, 1910.—A. S. Fournier, R. F. D. No. 2: "The trees I got from you last year were all that anyone could wish. They have done fine under the climatic condition this summer."

Manette, Washington, September 24th, 1910.—Oliver Avery: "My trees that I bought of you two years ago look so fine that I refuse others."

Kent, Washington, October 25th, 1910.—J. A. Titus: "This is to certify that the trees I purchased from you to put out in my orchard in 1906 are giving good results, and I am well pleased with them."

Kent, Washington, October 6th, 1910.—E. G. Vashus: "This is to certify that the trees I bought from you five years ago have done very well and the result is excellent."

The originals of these and scores of other similar letters are in our files.

The purchasers are building orchards out of the trees, and we are of course glad to feel that we have added another army of satisfied customers to our already long list.

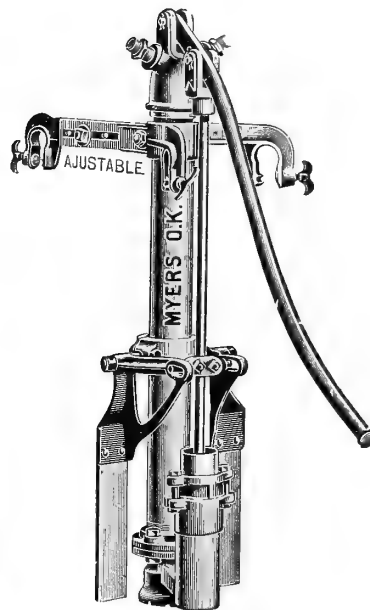
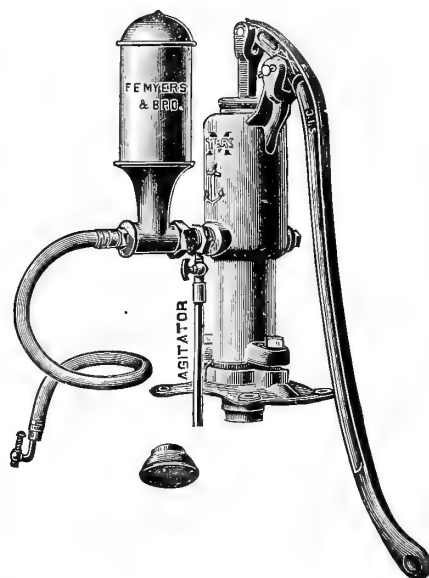
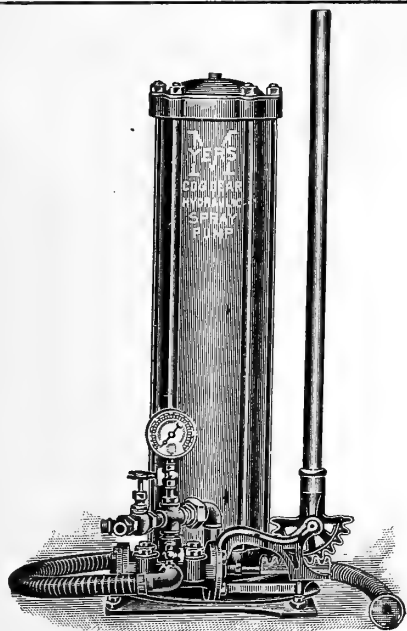
We want your business. We can please you. We grow our stock on soil unsurpassed in fertility and with the advantage of irrigation, long months of sunshine, persistent cultivation and intelligent supervision, we certainly develop trees unequalled in root growth and in vigorous healthy top.

*Write Us Your Wants*

# WASHINGTON NURSERY Co.

TOPPENISH, WASHINGTON





## The Purchase of a Myers Spray Pump is a long step toward the raising of Quality Fruit

Of course the next step is the proper and thorough use of the pump, but the point is, that you have the **right** pump to use. The pump that has been tried out under all sorts of spraying conditions and has been found **right**. Growers in the Hood River Valley and every section which grows good fruit owe no small credit to Myers Spray Pumps, the pumps that are used by more big growers in the Northwest than any other line made. Thousands and thousands of farmers throughout the United States have found in the Myers the spray pump worth every cent they paid for it, and more. The Myers line is very complete and contains many various styles and sizes. The new Myers Spray Book, showing the entire line, will soon be ready for distribution. If you want one, just use the coupon below.

## The Mitchell Power Sprayer

COMPACT                      SIMPLE  
SATISFACTORY

Improved? Well, we should say so. Just note that platform and think what a convenience it is in spraying big trees. And this is not the only added advantage to be found in the 1911 Mitchell Sprayers. It is more strongly built throughout, the pump is more efficient, and the engine—well, the engine is a two-horse Stover, the simplest, strongest engine made. The agitator is connected by an iron rod to the pump pitman rod, which gives perfect agitation, not too fast or too slow, just right. If you want our circular on the Mitchell Sprayers check and send in the coupon.



## ARE YOU INTERESTED?

IF SO, CHECK THE COUPON AND MAIL IT IN

IMPLEMENTS  
AND  
VEHICLES

*Mitchell*  
LEWIS & STAYER CO.  
PORTLAND  
SPOKANE  
SEATTLE  
BOISE

Mitchell, Lewis & Stayer Co.,  
Portland, Oregon

Please send me information on lines checked below as advertised in  
"Better Fruit."

MYERS SPRAY PUMPS  
MITCHELL POWER SPRAYERS

Name

Address

# THE GREAT OBJECTION

Of the average man who wants to own an Orchard, Home is the fear of *isolation* and consequent lack of schools, churches and other advantages to which he and his family have been accustomed

We Have  
the Best:  
Soil, Climate  
Water  
Scenery  
Transportation  
Natural  
Resources



We do not  
have:  
Killing Frosts  
Heavy Snows  
Sand Storms  
Excessive  
Heat  
Severe Cold  
Malaria

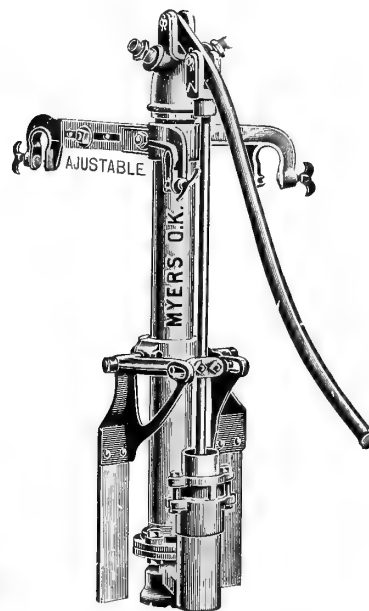
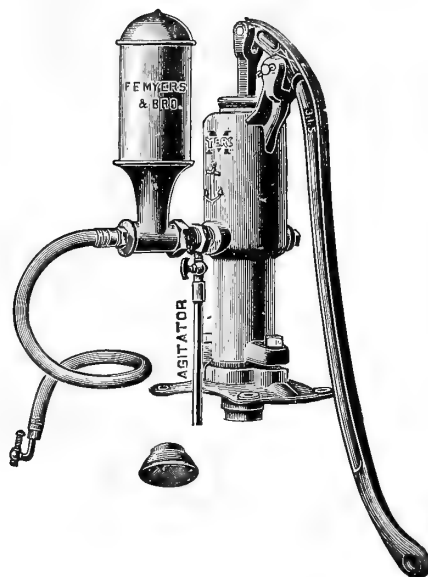
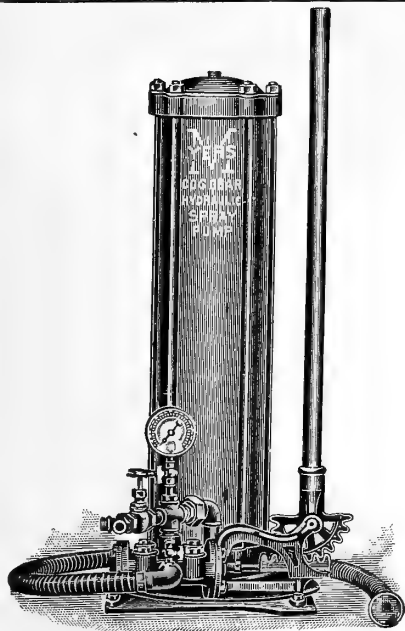
*We Have Overcome All the Above Objections*

In our subdivision of the magnificent *Ashland Orchard Tracts* immediately adjoining the *Beautiful and Prosperous City of Ashland* in the famous *Rogue River Valley*. A perfect tract of two thousand acres in and adjoining a city of homes and schools in a valley of sunshine and fortune

*Plats and Descriptive Matter Upon Request*

**Ashland Suburban Orchards Syndicate**

Ashland, Oregon



## The Purchase of a Myers Spray Pump is a long step toward the raising of Quality Fruit

Of course the next step is the proper and thorough use of the pump, but the point is, that you have the **right** pump to use. The pump that has been tried out under all sorts of spraying conditions and has been found **right**. Growers in the Hood River Valley and every section which grows good fruit owe no small credit to Myers Spray Pumps, the pumps that are used by more big growers in the Northwest than any other line made. Thousands and thousands of farmers throughout the United States have found in the Myers the spray pump worth every cent they paid for it, and more. The Myers line is very complete and contains many various styles and sizes. The new Myers Spray Book, showing the entire line, will soon be ready for distribution. If you want one, just use the coupon below.

## The Mitchell Power Sprayer

**COMPACT                      SIMPLE**  
**SATISFACTORY**

Improved? Well, we should say so. Just note that platform and think what a convenience it is in spraying big trees. And this is not the only added advantage to be found in the 1911 Mitchell Sprayers. It is more strongly built throughout, the pump is more efficient, and the engine—well, the engine is a two-horse Stover, the simplest, strongest engine made. The agitator is connected by an iron rod to the pump pitman rod, which gives perfect agitation, not too fast or too slow, just right. If you want our circular on the Mitchell Sprayers check and send in the coupon.



## ARE YOU INTERESTED?

IF SO, CHECK THE COUPON AND MAIL IT IN

IMPLEMENTS  
AND  
VEHICLES

*Mitchell*  
**LEWIS & STAYER CO.**  
PORTLAND  
SPOKANE  
SEATTLE  
BOISE

Mitchell, Lewis & Stayer Co.,  
Portland, Oregon

Please send me information on lines checked below as advertised in  
"Better Fruit."

**MYERS SPRAY PUMPS**  
**MITCHELL POWER SPRAYERS**

Name . . . . .

Address . . . . .

# THE GREAT OBJECTION

Of the average man who wants to own an Orchard, Home is the fear of *isolation* and consequent lack of schools, churches and other advantages to which he and his family have been accustomed

We Have  
the Best:  
Soil, Climate  
Water  
Scenery  
Transportation  
Natural  
Resources



We do not  
have:  
Killing Frosts  
Heavy Snows  
Sand Storms  
Excessive  
Heat  
Severe Cold  
Malaria

*We Have Overcome All the Above Objections*

In our subdivision of the magnificent *Ashland Orchard Tracts* immediately adjoining the *Beautiful and Prosperous City of Ashland* in the famous *Rogue River Valley*. A perfect tract of two thousand acres in and adjoining a city of homes and schools in a valley of sunshine and fortune

*Plats and Descriptive Matter Upon Request*

**Ashland Suburban Orchards Syndicate**

Ashland, Oregon



VOLUME FIVE

NUMBER NINE

10 CENTS  
A COPY DOLLAR A YEAR

---

OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

---

# BETTER FRUIT

*MARCH 1911—SMALL FRUITS EDITION*

---



*Courtesy Portland Seed Company*

THE "NEW OREGON" STRAWBERRY

---

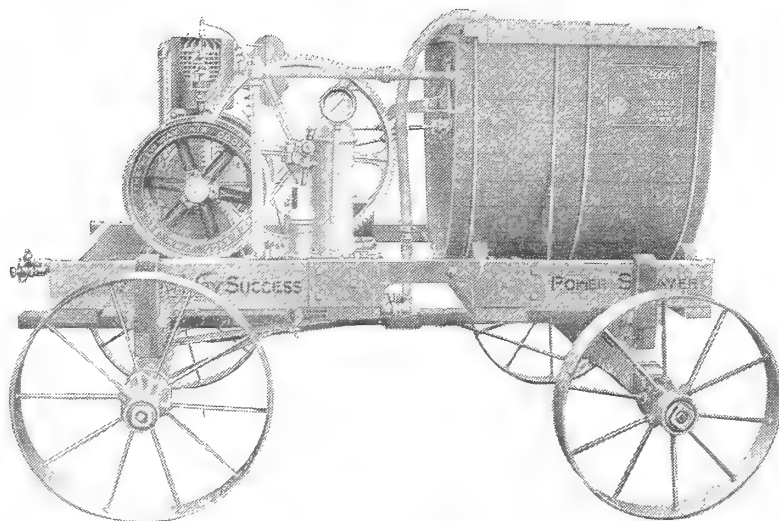
PUBLISHED BY BETTER FRUIT PUBLISHING COMPANY, HOOD RIVER, OREGON



# ***THE "New-Way"***



the  
light  
weight  
outfit



with the  
high  
pressure  
guarantee

## Twin Cylinder **"SUCCESS"**

IS JUST WHAT ITS NAME INDICATES

### Light Weight

The first high pressure, light weight outfit that has proven practical for orchards of any size. Speically adapted to hilly or soft ground.

### 200 Pounds Pressure

Absolutely guaranteed to keep up 200 pounds pressure indefinitely. No strain on outfit, pump built to give it. 200 pounds pressure is absolutely necessary to produce the highest grade and best quality of fruit.

### Twin Cylinder Pump

Twin cylinders cast separately. Constant, steady high pressure. Outside packed pistons. Packing tightened by hand instantly, or replaced in five minutes.

### Engine

The "New-Way" air cooled. The high grade quality farm engine. Some outfits furnish the cheapest engines that can be purchased. A cheap engine spoils any sprayer.

### The "Special"

The "SPECIAL" is larger, has greater capacity, larger pump, 3½ H. P. "New-Way" air cooled engine. Built for long continuous spraying in the largest fruit districts.

Catalog Send a postal for our "Success" or "Special" catalog.

MENTION "BETTER FRUIT" AND ADDRESS

35 ASH  
STREET

**THE "New-Way" MOTOR COMPANY**  
LANSING, MICHIGAN, U.S.A.

35 ASH  
STREET

OR **JOHN DEERE PLOW CO.** PORTLAND SPOKANE



# WHAT HAS THE NORTHWESTERN FRUIT EXCHANGE ACTUALLY ACCOMPLISHED?

SINCE ITS ORGANIZATION, JULY 29, 1910  
IT HAS SOLD

## 687 Cars to Buyers in 124 Different Markets

Situated in 29 States, 2 Canadian Provinces, 5 European Countries—Germany, England, Wales, Scotland and Ireland, including 24 different cities in England, 2 in Ireland, 1 each in Germany, Scotland and Wales.

*The Widest Distribution Northwestern Fruits Have Ever Undergone  
Over 90 per cent of all Apples handled were sold F.O.B. Shipping Station*

The Exchange is preparing comprehensive statements showing average prices realized f.o.b., for each district, variety, grade and size, separately, and will be glad to furnish this information on application. The results **speak for themselves**.

The EXCHANGE is a HOME INSTITUTION—controlled absolutely by fruit growers, as well as being directed throughout by fruit growers whose interests are the COMMON INTERESTS OF THE WHOLE INDUSTRY.

The Sales Records of the EXCHANGE are OPEN TO ALL FRUIT GROWERS at all times. The location of the head offices of the Exchange makes it comparatively easy for every fruit grower to familiarize himself with the details of the EXCHANGE'S operations. The EXCHANGE wishes that every grower in the Northwest could spend a few days in its offices, seeing for himself the unremitting CARE with which his business is handled, the scrupulous INTEGRITY of its accounting, the comprehensive SCOPE of its canvass of the markets, the careful JUDGMENT which is the final test of service.

THE EXCHANGE acts as SALES AGENT FOR ASSOCIATIONS. It believes profoundly in the principal of local association, and wishes it distinctly understood that its policy is one of SUPPORT of this principle; also, that it is in thorough accord and perfect sympathy with **any** and **every** practical movement which gives promise of betterment to the fruit-growing industry.

Ownership of its stock by bona fide fruit growers' associations, and representation on its Advisory Board, are strong features of membership in the EXCHANGE.

The EXCHANGE invites correspondence from all such associations as believe in its principles and wish to inform themselves further regarding its facilities.

## NORTHWESTERN FRUIT EXCHANGE

GENERAL OFFICES: PORTLAND, OREGON

President, REGINALD H. PARSONS (President Hillcrest Orchard Co., 200 acres; Vice President Rogue River Fruit and Produce Association)

Vice President, M. HORAN (President North Central Washington Development League)

Vice President, W. N. IRISH (President Yakima County Horticultural Union)

Secretary, C. R. DORLAND

Treasurer and General Manager, W. F. GWIN (Secretary Kenmar Orchard Company)

## Own an Irrigated Fruit Orchard

*in the famous*

# Bitter Root Valley

And Provide an Annuity for Old Age

We will plant and take care of the land during the growing period, turning over to you a bearing orchard, which will thereafter yield a competence for life. Easy terms

Send for Literature

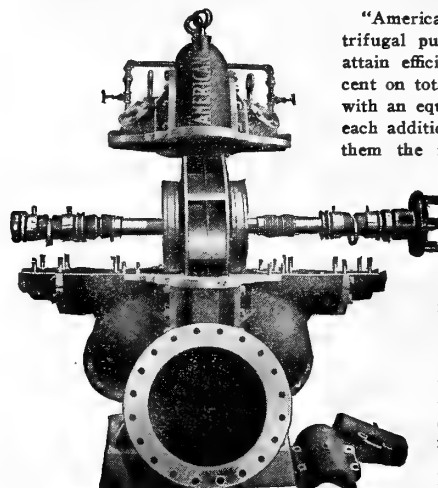
**Bitter Root Valley Irrigation Co.**

Hamilton, Montana

First National Bank Building, Chicago

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
last summer to pumps were awarded to

## "AMERICAN" PUMPING MACHINERY



"American" single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet. with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

"American" centrifugals are made in both horizontal and vertical styles. in any size, in any number of stages, and are equipped with any power.

Write for "Efficiency Tests of American Centrifugals," by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## The American Well Works

General Office and Works: Aurora, Illinois, U. S. A.  
Chicago Office: First National Bank Building

PACIFIC COAST SALES AGENCIES:

70 FREMONT STREET, SAN FRANCISCO  
341 SOUTH LOS ANGELES STREET, LOS ANGELES  
SECOND AND ASH STREETS, PORTLAND, OREGON  
1246 FIRST AVENUE SOUTH, SEATTLE  
305 COLUMBIA BUILDING, SPOKANE

# Irrigation is King—

and the King of all Apples is grown in

# Spokane Valley

We received "THREE FIRST PRIZES" at the Third Spokane National Apple Show, held in Spokane November, 1910, which is conclusive evidence that we produce as high grade apples as are produced anywhere in the Northwest.

In addition to this, we have an ideal climate, best of transportation, and in view of the fact that our properties are located two and a half to twelve miles from the Queen City of the Inland Empire, "SPOKANE," with a population of over one hundred thousand, affording unexcelled markets, with very best social and educational advantages, this should appeal to anyone looking for a comfortable as well as a profitable home.

Why not invest in land with all these advantages, obtainable for less money than can be bought in other districts.

*Write for Booklet, "Trip Through the Spokane Valley."*

**Spokane Valley Irrigated Land Co.**

Incorporated

NO. 401 SPRAGUE AVENUE

SPOKANE, WASHINGTON



IF YOU WANT TO  
MARKET YOUR

**FRUIT**

RIGHT

ALWAYS SHIP TO

**W. B. Glafke Co.**

**WHOLESALE FRUITS  
AND PRODUCE**

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**

**GENERAL COMMISSION MERCHANTS**

128 FRONT STREET

PHONES: MAIN 2348  
A-2348

PORTLAND, OREGON

**Levy & Spiegel**

WHOLESALE

**FRUITS & PRODUCE**

*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS

Top Prices and Prompt Returns

PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*

Livingston, Bozeman, Billings,  
Montana

Pocatello, Idaho  
Salt Lake City, Utah

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS

*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

**WHOLESALE  
FRUITS AND  
PRODUCE**

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of

**YAKIMA VALLEY FRUITS  
AND PRODUCE**

Specialties: Apples, Peaches,  
Pears and Cantaloupes

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER

**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

Look Good, Taste Better, Sell Best

*Grade and Pack Guaranteed*

**Apple Growers' Union**

Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

**WHOLESALE FRUITS**

121-123 FRONT AND  
200 WASHINGTON ST.  
PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**

# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we **sell apples**. We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK  
LIVERPOOL NEW YORK BOSTON GLASGOW

## SIMONS, SHUTTLEWORTH & CO.

LIVERPOOL and MANCHESTER

SIMONS, JACOBS & CO.  
GLASGOWJ. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARISGARCIA, JACOBS & CO.  
LONDON

## European Receivers of American Fruits

*For Market Information Address:*Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webling  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine

OUR SPECIALTIES ARE APPLES AND PEARS

## Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

**PEACHES  
APPLES AND  
PEARS**

Solicit Your Consignments

Reliable Market Reports Prompt Cash Returns

## Ryan & Newton Company

Wholesale Fruits &amp; Produce

Spokane, Washington

We have modern cold stor-  
age facilities essential for the  
handling of your products

Reliable Market Reports

PROMPT CASH RETURNS

## LINDSAY & CO. LTD. Wholesale Fruits

HELENA, MONTANA

Established in Helena Quarter of a Century

Branch houses: Great Falls, Mis-  
soula and Billings, Montana



*Best Service and Protection is Secured by Dealing  
with Members of the*

## NATIONAL LEAGUE OF COMMISSION MERCHANTS OF THE U. S. A.

AN ORGANIZATION OF RELIABLE AND RESPONSIBLE RECEIVERS IN TWENTY-EIGHT MARKETS  
FOR FREE DIRECTORY OF MEMBERS, WRITE R. E. HANLEY, PUB. MGR., BUFFALO, NEW YORK

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

## W. DENNIS & SONS LIMITED

COVENT GARDEN MARKET  
LONDON

*and*

CUMBERLAND STREET  
LIVERPOOL

## NEW ORLEANS

IMPORTERS  
JOBBER

Wholesale  
Commission

The Acknowledged Fancy  
Fruit House of New Orleans

# LAUX & APPEL

The  
House YOU Want

All Fruits in Season

STORAGE FOR  
FIFTY CARS

## MCEWEN & KOSKEY

Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

### CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

# Spitzenbergs & Newtowns

*From the*

Hood River Valley,  
Oregon

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

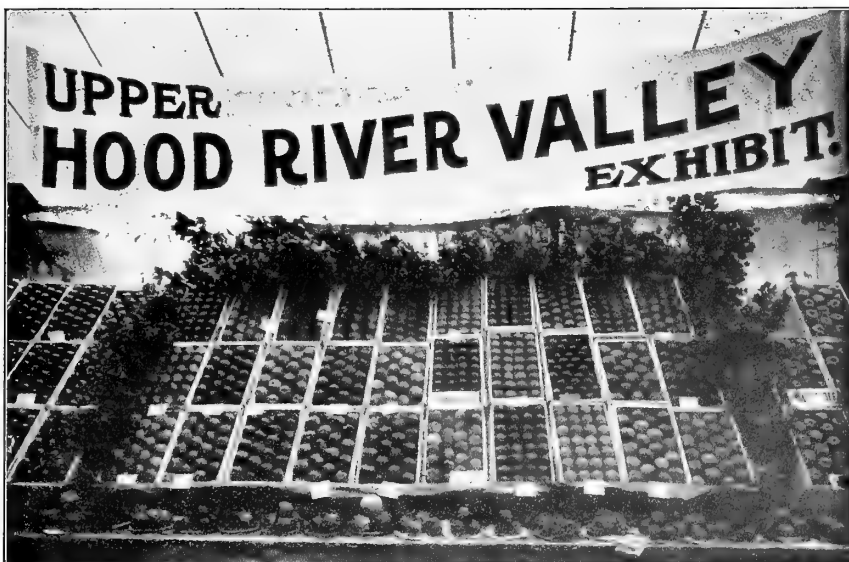
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

### Can You Beat It?

We have got land improved and unimproved that is growing such fruit that can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

## W. J. Baker & Company

Hood River  
Oregon

The oldest real estate firm in Hood River. Best apple land our specialty

# 320 Acre Planted Apple Orchard

## FROM ONE TO FOUR YEAR OLD, (STANDARD VARIETIES)

### At \$400 to \$500 Per Acre

Can be bought in five, ten or any size tract. Located in the Upper Hood River Valley. Have small or large tracts of improved and unimproved property in the lower and upper valley. Have also ten acres of bearing orchard for sale, located in center of Hood River Lower Valley.

G. D. WOODWORTH

*For Full Information Address*

HOOD RIVER, OREGON

# ARCADIA IRRIGATED ORCHARDS

THE CENTER OF THE RICH WASHINGTON FRUIT BELT

Arcadia is located twenty-two miles from Spokane, Washington. It's a true fruit district—with every conceivable advantage for making money in the fruit business.

Rich soil, gravity irrigation system, excellent railroad facilities, ideal climate.

**Our Plan**—We plant, cultivate, irrigate and care for your orchard for four years; we pay your taxes for five years. You can remain where you are while we bring your orchard into bearing.

Arcadia is the largest irrigation project in the West. Prices advance January 1st, 1911, so it will pay you to investigate Arcadia now. Ask for literature.

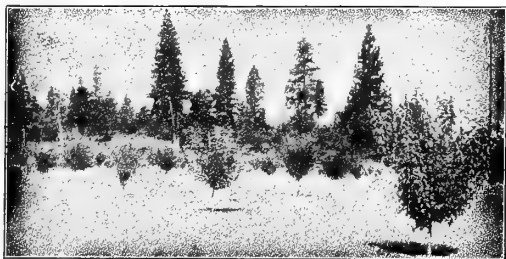
**ARCADIA ORCHARDS COMPANY**

HYDE BLOCK

SPOKANE, WASHINGTON

"THE LAND WHERE THE RAIN AND SUNSHINE MEET"

## LYLE, WASHINGTON



A YOUNG ORCHARD NEAR LYLE

THE FIRST PRIZE for the best district display of non-irrigated apples was awarded the LYLE exhibit at the SPOKANE NATIONAL APPLE SHOW, 1910. This speaks for itself.

*FOR BOOKLET AND FURTHER INFORMATION ADDRESS*

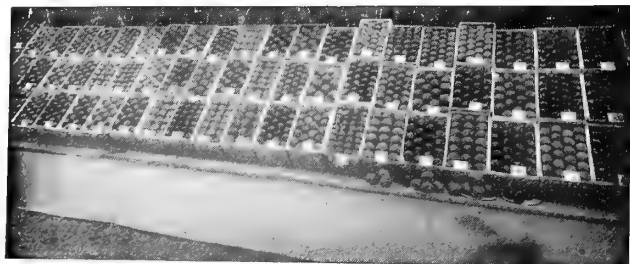
**LYLE COMMERCIAL CLUB**

LYLE, WASHINGTON

## \$1000

## PER ACRE NET

## \$1000



MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley, and is properly a part of it, so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

SECRETARY MOSIER VALLEY COMMERCIAL CLUB

**MOSIER, OREGON**



# The Bond of Confidence

Reflects Upon Every Sale of Irrigated Land at

# OPPORTUNITY

## IN THE SPOKANE VALLEY, WASHINGTON



A PRODUCING ORCHARD AT OPPORTUNITY, WASHINGTON

**OPPORTUNITY** is three miles from Spokane, and offers you the greatest opportunity of your lifetime. Here you can own an orchard in the best and nearest fruit district to Spokane and become independently wealthy in a short time.

Now, we want to prove this to you. We want to put you in touch with people who are now making money at **OPPORTUNITY**, and they will tell you all about this wonderful fruit district. We have letters from them printed in our booklet.

Now, **LISTEN!** **OPPORTUNITY** is a high class fruit district, with electric lights, telephone service, splendid irrigation system, railroad facilities of the best, and all other conveniences that you could desire.

A great deal of money has been expended at **OPPORTUNITY** to make it the most ideal orchard district in the Northwest, and that's why it is such a great success.

GET THE BOOKLET TODAY

## Modern Irrigation and Land Company

P. A. SUMMERLAND, General Sales Agent

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet on Opportunity.

Name .....

Address .....

.....

# Irrigated Orchard Tracts **Rogue River Valley**



ROGUELANDS IRRIGATED ORCHARD TRACTS

OREGON ORCHARDS ARE THE MOST FAMOUS  
IN THE WORLD

ROGUE RIVER VALLEY IS THE BEST ORCHARD  
DISTRICT IN OREGON

SOLD ON SMALL MONTHLY  
OR ANNUAL PAYMENT PLAN

The Rogue River Valley has made the apple king. It has won the national prizes at the greatest shows ever held in America. It has received the highest prices ever paid for fruit in the New York and London markets. It has been declared by government experts to be the most perfect fruit belt in the world, and has proven beyond the question of a doubt that it will be the most important fruit section in the entire country. The development of orchard tracts is very profitable. You can make \$1,000 per annum on a five-acre tract while your orchard is coming into bearing. You can clear \$500 per acre when your orchard is developed. We will sell you a five-acre irrigated orchard tract in the very heart of this wonderful orchard country, with splendid railroad facilities, near the prosperous city of Medford, planted to standard varieties of apples or pears, at \$350 per acre; \$350 cash, balance covering a period of four years. Orchards cared for during a period of five years or turned over at once to the purchaser.

Let us tell you all about the glorious country of Southern Oregon and the wonderful orchards that have made this valley famous. Write for our literature. Our references: Bradstreets and R. G. Dun.

## ROGUELANDS, INC.

FRED N. CUMMINGS, MANAGER

MEDFORD, OREGON

# Cheap Hood River Apple Lands

Arable tracts of first-class apple land can be bought for prices as low as \$50.00 an acre, easy terms. We have good offers to make in Underwood, White Salmon and Lyle, the famous Columbia River non-irrigated districts.

Unimproved land in Underwood \$150.00 an acre, one mile from station on North Bank R. R.; red shot clay soil; no rock; light timber and brush; cost of clearing \$50.00 to \$80.00 an acre. Wonderful view of Mt. Hood and Columbia River Gorge. Improved bearing orchards, 5 to 40 acres.

## JOHN LELAND HENDERSON, Inc.

Portland Office:

J. L. Henderson, 600 Chamber of Commerce.

Hood River, Oregon

# HOW YOU CAN SECURE AN ORCHARD THAT WILL PAY FOR ITSELF

These orchards are located in the deep volcanic ash fruit soil of the great Columbia River Basin, less than 100 miles from Portland, Oregon, near Mount Hood and the famous Hood River Valley, with railroad depot on the property.

If you are interested, and have a little money, write, today, for full information in regard to this opportunity, the like of which you will not have again soon, and for "How I Can Secure an Orchard That Will Pay for Itself."

## DUFUR DEVELOPMENT COMPANY

91 Third Street

PORTLAND, OREGON

# OKANOGAN IRRIGATION AND IMPROVEMENT CO.

*Capital Stock, \$500,000*

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of water shed on mountain streams furnish an abundant supply of water.

Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

## No Better Fruit Land in the State of Washington

A small block of stock for sale at \$75 per share, par value \$100. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

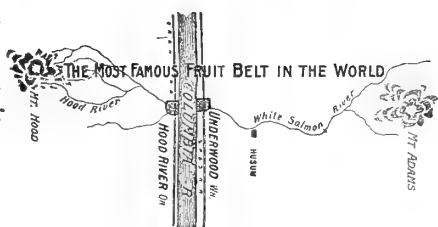
*Read descriptive article elsewhere in this issue of  
"Better Fruit"*

# UNDERWOOD

*The Gateway to the Famous White Salmon Valley*

If you want a strictly first-class location for growing high-grade fruit, close to the river and railroad, within sight of the town of Hood River, with the best of everything in the way of shipping and social advantages, call on or write

W. F. CASH, UNDERWOOD, WASHINGTON



## G. Y. EDWARDS & CO.

HOOD RIVER, OREGON

*Our Specialties:*

Fruit Lands, Orchards and Raw Lands

Get our literature and list of orchards

WRITE US FOR PARTICULARS



## ASHLAND DISTRICT *of the* ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent free on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.



Three-year-old Spitzenberg in Rogue River Valley

## ROGUE RIVER VALLEY

Best medium climate in the United States

Best values for the least money

THE 25-ACRE TRACT of which this picture shows a portion is now four years old. Elegant Spitzenberg and Newtown Pippin trees, some of which are from ten to twelve feet high, showing a body five inches in diameter. Also contains about 2½ acres of the best one-year-old commercial pears. This is close to the beautiful Rogue River, which affords elegant fishing and boating. Entire tract is deep, free, river bottom loam soil, along a level county road, only about four miles from town, in the best bearing orchard district. This is the **BEST YOUNG COMMERCIAL ORCHARD ON THE MARKET** here. Can be bought for a short time, either as a whole or divided, at \$500 PER ACRE, on reasonable terms. *If you want it you will have to hurry.*

Also have a choice list of other tracts of all descriptions.

Elegant prospects for much additional railroad development here this season.

For full information regarding this and other tracts, write or call on

**A. N. PARSONS, Grants Pass, Oregon**

References by permission: First National Bank, Grants Pass Banking & Trust Company.

APPLES

PLUMS

PEARS

PEACHES

PRUNES

## WHITE SALMON VALLEY THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.

**WHERE APPLES, CHERRIES, PEACHES, PEARS, PRUNES AND STRAWBERRIES GROW TO PERFECTION**

A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.

We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap.

WRITE US FOR DESCRIPTIVE MATTER AND PRICES

**ESTES REALTY & INVESTMENT CO.**

White Salmon, Washington

BERRIES

CHERRIES

STRAWBERRIES

NUTS

SPITZENBERGS WINESAPS

JONATHANS NEWTOWNS

## “OREGON IS THE PLACE FOR ME”

### PORTLAND COMMERCIAL CLUB Portland, Oregon

Send me specific information about what Oregon has to offer

- |  |                                     |
|--|-------------------------------------|
| <input type="radio"/> Apple Orchardng    | <input type="radio"/> Hotels        |
| <input type="radio"/> Pear Orchardng     | <input type="radio"/> Resorts       |
| <input type="radio"/> Peach Orchardng    | <input type="radio"/> Schools       |
| <input type="radio"/> Prune Orchardng    | <input type="radio"/> Railroads     |
| <input type="radio"/> Live Stock Raising | <input type="radio"/> Towns         |
| <input type="radio"/> Poultry Raising    | <input type="radio"/> Mining        |
| <input type="radio"/> Truck Farming      | <input type="radio"/> Manufacturing |
| <input type="radio"/> Walnut Culture     | <input type="radio"/> Water Power   |
| <input type="radio"/> Wheat Growing      | <input type="radio"/> Merchandising |
| <input type="radio"/> Dairying           | <input type="radio"/> Berry Growing |
| <input type="radio"/> Timber             |                                     |

Name .....

Street .....

Town .....

State .....

That's what you'll say when you learn specifically just what opportunities Oregon can offer you in *your own line* of endeavor.

The Portland Commercial Club will lend you all the assistance within its power to make you thoroughly acquainted with the possibilities Oregon offers you in your own line. It will tell you specifically what inducements different sections of the state are offering.

In manufacturing—in dairying—in agriculture—in fruit raising—and all other lines, Oregon offers splendid opportunity for great and successful achievement.

Take out your lead pencil or pen—look down the list of industries, and in the little circle opposite the business that interests you most, make a mark, clip out the list and mail it in. In return you will receive valuable and specific information regarding those sections of Oregon peculiarly adapted to your special line. Write a personal letter. Ask questions that come into your mind. They will all be answered fully and comprehensively. Check the list now while you have it in mind.

**Portland Commercial Club  
Portland, Oregon**



# COLONIST FARES

FROM THE MIDDLE AND EASTERN PORTIONS  
OF THE UNITED STATES AND CANADA TO

## Oregon, Washington

and all the Northwest will prevail Daily

## March 10th to April 10th

OVER THE

# Oregon-Washington Railroad & Navigation Co.

AND CONNECTIONS, THE

Oregon Short Line, Union Pacific and  
Chicago & North-Western

THE SAFE LINE—PROTECTED BY AUTOMATIC BLOCK SIGNAL

FROM

Chicago at . . . . .	\$33.00	Kansas City . . . . .	\$25.00
St. Louis . . . . .	32.00	St. Paul . . . . .	25.00
Omaha . . . . .	25.00	and from other cities correspondingly low	

**You Can PREPAY Fares**—The Colonist fares are westbound only, but if you have relatives or friends or employes in the East whom you desire to bring to this state you can deposit the value of the fare with your local railroad agent, and an order for a ticket will be telegraphed to any address desired.

Let the **WORLD** know of our vast resources and splendid opportunities for **Home Building**. Call on the undersigned for good instructive printed matter to send East, or give him the addresses of those to whom you would like to have such matter sent.

**WM. McMURRAY, General Passenger Agent, Portland, Oregon**

# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water **TRANSPORTATION**, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this **world famous apple section of the Cascade Highlands**.

Other places of the Northwest are also profitable for orchards, but in **these highlands** is the place to live and enthruse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great opportunities for investment.

## Development League

### WHITE SALMON, WASHINGTON

## White Salmon Orchard Lands = Special This Month

709—20 acres 2½ miles from White Salmon; 12 acres in year-old Spitzenberg and Yellow Newtown apples; 3 acres in strawberries planted between the apple trees; house, barn and good well; fine view of Mount Hood and the Columbia River. Price this month, only \$6,500; \$2,500 cash, balance 5 years at 8 per cent, or 5 per cent discount for all cash.

712—80 acres 7 miles north of White Salmon, 3½ miles of White Salmon River. A snap at only \$3,000; \$1,000 cash, balance 5 years, 8 per cent.

715—80 acres 9½ miles from White Salmon, ½ mile of White Salmon River, 1½ miles of Husum. Only \$50 per acre; half cash, balance 5 years, 8 per cent.

716—80 acres joining the above, forming a square 160 acres, at same price and terms.

For Bargains in Raw or Improved Orchard Lands, Address

**H. W. DAY REALTY CO.** White Salmon, Washington

(Successors to White Salmon Realty Co.)

## *Choice Fruit Land Our Specialty*

We have  
fine improved and unimproved fruit land  
on easy payment plan—we can  
supply your wants

**R. FIELD & CO.**

White Salmon, Washington

## *The* **PARIS FAIR**

Hood River's largest and best store

**DRY GOODS**  
**SHOES, CLOTHING**

We are offering some extra specials in our Clothing Department. Ask to see them.

Try a pair of American Lady \$3 and \$3.50 Shoes, or American Gentleman \$3.50 and \$4 Shoes

# KIMBALL CULTIVATOR

*Great Weeds and Ferns Exterminator*

Ninety Per Cent  
Hood River Orchardists  
Use  
This Machine

Send for  
Illustrated Descriptive  
Booklet



Hood River, Oregon, February 26, 1910

Mr. W. A. Johnston,  
The Dalles, Oregon

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard, *Editor "Better Fruit"*

## W.A. JOHNSTON, Manufacturer

Office and Factory, 811 East Second Street, The Dalles, Oregon

Long Distance Phone, Main 3671

# SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

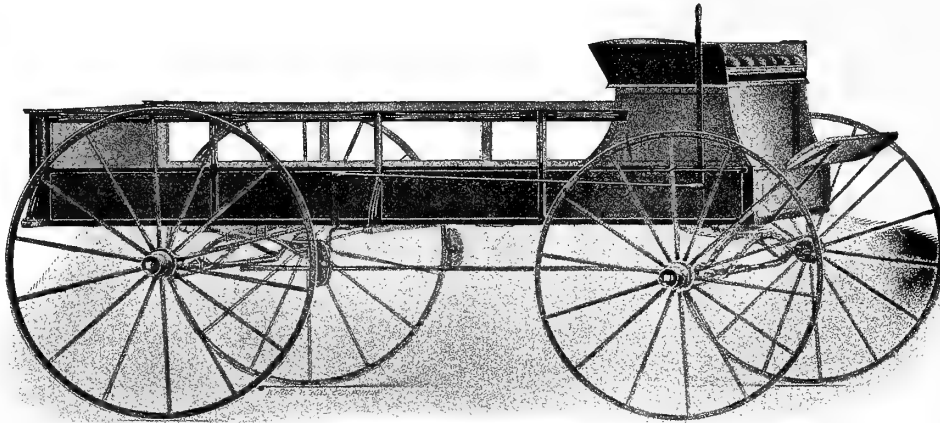
WHOLESALE AND RETAIL DEALERS IN

## Vehicles and Implements

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

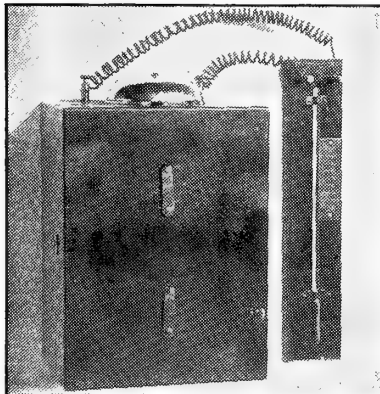
Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

## Have Your Own Weather Bureau

Get a Cedarborg Frost Alarm and be sure and to get your frost warning in time. Write and let us tell you how to save money by getting your order in before the rush.

The  
Cederborg Engineering Co.  
808 Twentieth Street, Denver, Colorado



## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

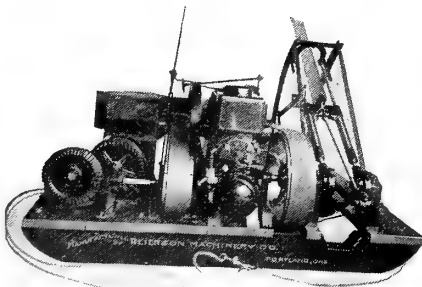
C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries,  
Plums, Prunes, Apricots, Grapes  
and Cantaloupes

Mixed carloads start about  
July 20. Straight carloads in  
season. Our fruit is the very  
best grade; pack guaranteed

We use Revised Economy Code

KING OF THE WOODS



45 CORDS SAWED  
IN ONE DAY

## POWER DRAG SAW

Saves money and backache. Weighs only 1,600 pounds, with 4-horsepower Waterloo engine, water-cooled. Can be operated by one man. Pulls itself forward and backward, up hill or down hill; lots of power and some to spare. Uses only 4 gallons distillate per day, which costs 8 1/2 cents per gallon. Get our descriptive catalogue and prices.

**Reiersen Machinery Company**  
PORTLAND, OREGON

WATCH THIS  
SPACE FOR  
CUT OF OUR  
IMPROVED  
POWER SPRAYER

WRITE  
FOR  
PRICES



# HOOD RIVER

THE MODERN GARDEN OF HESPERIDES

*“Within the Shadow of Mighty Mount Hood”*

“Where the rain and sunshine meet.” There grow the finest and most delicious apples in all the wide, wide world. Every apple picked by hand and packed in the most scientific manner under the direct and personal inspection of the Board of Directors of the

## HOOD RIVER APPLE GROWERS' UNION

We take pleasure in advising the trade that for the third consecutive time practically the entire crop of this noted valley has been purchased by us, consisting of the noble NEWTOWN PIPPIN, the delicious SPITZENBERG, the magnificent GOLDEN ORTLEY and such other varieties as grow to perfection only in the Hood River Valley.

# Steinhardt & Kelly

NEW YORK

THE MOST EXTENSIVE OPERATORS IN HIGH CLASS FRUITS IN THE WORLD

# Hood River City Investments

100x100 On Oak Street, with good buildings, rental income \$110 per month, only \$16,000. Liberal terms.

100x200 On Cascade Avenue, consisting of four good lots and frame house. This will double in value within two years. \$7,000. Good terms.

*Combination Orchard and Hay Ranch*—175 acres. 20 acres in orchard from two to fourteen years old, 70 acres in hay produced 100 tons in 1910, balance of land uncleared. Large house and barns, 50 inches irrigating water, all haymaking machinery, near stores and school. \$35,000. Very liberal terms. Big money to be made on this property.

(NOW IS A GOOD TIME TO BUY A HOME  
OR BUSINESS PROPERTY IN HOOD RIVER  
THERE IS SURE TO BE A BIG ADVANCE IN PRICES)

SEE OUR LIST OF ORCHARDS

## J. H. HEILBRONNER & CO.

THE RELIABLE DEALERS

HEILBRONNER BUILDING

HOOD RIVER, OREGON

## Properties that will be worth 10 to 20% more next Spring

10-acre block of solid orchard, located  $2\frac{1}{2}$  miles from town, on main county road. All Newtowns and Spitzenbergs, 5 years old, and in the very best of condition, having had a few apples last year. There is not a better orchard on the West Side—nothing to compare with it at the price of \$12,000. \$5,000 cash, balance 7% interest.

15 acres  $6\frac{1}{2}$  miles from Hood River; near railway station, school and church; all set to Newtowns and Spitzenbergs, as follows: 5 acres 7 years old, 3 acres 6,  $1\frac{1}{2}$  acres 4 and  $4\frac{1}{2}$  acres 3 years old. Trees in A1 condition; picked 1,120 boxes of apples this year. Three acres of strawberries between trees. Old house, good barn. This tract is one of the best buys in the Hood River Valley at the price of \$14,000. \$5,000 cash, balance on or before five years at 7%.

103 acres on edge of Willow Flat District; heavy red shot soil, south and east slope, with good drainage; 20 acres under cultivation; 10 acres set to young Newtowns and Spitzenbergs; 8 acres practically cleared, balance of place fir and oak timber. Small house and barn. The price is way below the market at \$14,000. \$3,500 cash, balance on or before seven years at 7%.

20 acres  $7\frac{1}{2}$  miles southeast of Hood River; red shot soil, good drainage, and all under the ditch; 4 acres in Spitzenbergs and Newtowns one year old; 12 acres slashed and burned, balance in fir. Price \$5,000; \$2,000 cash, balance on or before five years at 7%.

FOR INFORMATION REGARDING HOOD RIVER WRITE

## DEVLIN & FIREBAUGH

THE LEADING DEALERS

Swetland Building, Portland, Oregon

Hotel Oregon Building, Hood River, Oregon

# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## STRAWBERRIES GROWN IN ORCHARD PROFITABLE

BY W. H. BURKE, THREE RIVERS, MICHIGAN

**D**URING a recent trip through the orchards of the Intermountain and Pacific Coast states, the present writer was struck by the failure of the orchardists, in many instances, to utilize the spaces between the rows of young orchard trees by the growing of some profitable crop. It occurred to me then that this must be due to the fact that the orchardists in this region were unfamiliar with what is going on in so many orchards in other sections of the country now being opened up to the production of fruit in large areas. For instance, on a recent trip through the orchards of the Pecos Valley of New Mexico we had excellent opportunity to learn, from the practical results secured there, of the high value of this method of utilizing these vacant spaces during the years when the orchards are coming into bearing. Not only did we learn from the orchardists that the practice was profitable, but we had opportunity to compare the trees in orchards where cultivated crops were grown with those where no crops were grown between the trees, and were agreeably surprised to note how much farther advanced and in how much better condition were the trees in those orchards where subsidiary crops were grown between the rows. We were especially struck by orchards in which strawberries were grown, because, as the strawberry requires frequent cultivation, we could see the trees had responded directly to that treatment, and were far and away in advance of the trees in nearby orchards—trees that had been set at the same time, in the same character of soil, and excepting for the fact that crops had been grown between the rows in one orchard, whereas none had been grown in the neighboring orchards, the same conditions throughout prevailed.

I also visited a Northern Michigan orchard last summer whose owner advised us that he was more than paying expenses while his trees were coming into bearing through the growing of strawberries. We receive letters from all over the country confirming our observation in these directions, and we are very confident that with the growing

demand for high grade strawberries, both locally and in far distant markets, the growers of the Pacific Coast and Intermountain states would find this method of utilizing the vacant spaces between the rows of trees a source of real profit.

### Contents

**STRAWBERRIES GROWN IN ORCHARD  
PROFITABLE, 19**

**SPRAYING FOR CURCULIO AND CODLING  
MOTH, 23**

Continued from Last Edition

**BREEDING AND DEVELOPMENT OF  
CANTALOUPE, 31**

**ORCHARDS INJURED BY THE TUSSECK  
MOTH, 35**

**THE CULTURE OF SMALL FRUITS ON  
PACIFIC SLOPE, 37**

**THE COMPOUNDING OF SPRAYS AND  
THEIR USES, 40**

EDITORIAL, 46

**INJURY CAUSED BY THE APPLE  
POWDERY MILDEW, 60**

Continued from Last Edition

**ANTHRACNOSE OF BLACKBERRY AND  
RASPBERRY, 73**

As to the methods to be employed in this line of work, we would suggest that from three to five rows of strawberries may be grown during the early stages of the orchard's development, depending, of course, upon the width apart at which the trees are set. Where approximately fifty trees are set to the acre at least two crops could be grown from five rows of plants during the earlier stages of the orchard's growth. As the trees spread their foliage the number of rows would become fewer, of course.

As to soil, the same conditions in this respect that will develop fine orchard trees will also grow fine crops of strawberries. In regions where irrigation is practiced the same rules would apply in that respect, excepting that we should advise a sparing use of water, as the tendency of the excessive use of water is to make the fruit flabby and tasteless.

As to plant-food conditions that are best calculated for the successful production of high-grade fruits, I would say that the principal elements should be present in the soil in about the following proportion: Nitrogen 3%, potassium 9% and phosphorus 7%. Any soil that contains these elements in anything like



Copyrighted 1910 by R. M. Kellogg Company

### SPREADING THE MULCHING OVER THE PLANTS

Please note in the foreground how evenly the mulching is spread over the plants. This protects the plants from freezing and thawing during the winter and early spring months, and keeps the plants strong and vigorous, so that they start growing immediately after they reach the purchaser. The mulching plays a very important part in making the R. M. Kellogg (Three Rivers, Michigan) plants the most vigorous and productive grown. The strawberry grower will find mulching to be equally important to his success.



Copyrighted 1910 by R. M. Kellogg Company  
MARKING OUT THE ROWS FOR STRAWBERRY FIELDS

these proportions will yield, where the plants receive proper cultural treatment, very large crops of strawberries.

One of the first elements of success in strawberry growing as well as in orcharding or any other line of horticultural production, is the quality of the plants set out. We are given a striking illustration of the possibilities of strawberries where thoroughbred strawberry plants and perfect cultural methods have gone hand in hand in your great State of Oregon. On pages 46 and 48 of the "Tenth Biennial Report of the Oregon Board of Horticulture" is a report of results secured by H. B. Steward, postmaster at Myrtle Point, Oregon. Mr. Steward is a believer in thoroughbred strawberries, and the plants from which the results related here were secured were of the thoroughbred quality. It is also evident that Mr. Steward believes in

thoroughbred cultural methods, and also in the same high order in packing his fruit for market. However, we would better quote from the report, as we are sure it will be most encouraging to soil tillers in your own and neighboring states. The report says:

"Mr. Steward is an expert strawberry grower. The land devoted to his strawberries is located on a high hill, with red loam soil, overlooking Myrtle Point and the Coquille River Valley. Mr. Steward's success with the strawberry at this point has been great, and the profits he has been able to realize from an acre make an object lesson for

Coos County that will be a source of great future wealth to the people of that locality if they emulate the example he has set for them.

When railroad connections are had with interior markets the demand for such fine strawberries as are grown by Mr. Steward will be, for many years, greater than they can supply. Mr. Steward assures me that off his three and one-half acres of the Magoon, Glen Mary and August Luther varieties he has been able to realize, net, \$1,600 per acre. To many strawberry growers in less favored sections than Coos County, I know, \$1,600 profit per acre will be taken as a real estate story, told for booming purposes, but it should be known that Mr. Steward's strawberries begin ripening May 15th, and continue to bloom and mature their fruit to October 15th, enabling the grower to gather ripe berries every day



NEW RUNNER CUTTER WITH HANDLE  
Manufactured by R. M. Kellogg Company  
Three Rivers, Michigan

between the dates mentioned, getting as much as four crops, as compared with less favored sections during the year, and the profits he assures me he gets are, I know, facts. Mr. Steward's soil being very rich and congenial to the growth of the strawberry, and the moisture-laden air, drifting over the land daily and condensing at night in heavy dew, keeps the vines strong and vigorous during the bearing season, which, with his skill as a grower, are the secrets of his profits and success. Mr. Steward won the prize offered by the strawberry king of the United States, R. M. Kellogg, of Three Rivers, Michigan. The prize was for the best crate of strawberries grown in the United States. Mr. Steward's prize winning crate contained twenty-four quart cups and averaged thirteen strawberries to the cup, uniform in size and perfect in color."

What Mr. Steward has accomplished may be done by others, and no matter how many engage in the work the market will take all of the first-class strawberries which are offered. The strawberry is peculiar in that the public never tires of them, and the more the public gets of them the more it seems to require. In the larger markets of the country, where a carload was shipped in ten years ago, the strawberry now comes in by the trainload, and the people of St. Paul and Minneapolis enjoy the Hood River product just as much as do the dwellers in Portland, Tacoma and Seattle.

Perhaps it may be well to briefly outline here some of the more salient points in strawberry culture for the benefit of those who never have grown this delicious fruit. It must be remembered at the outset that the question of sex in strawberry plants is



Copyrighted 1910 by R. M. Kellogg Company

#### HAULING THE MULCHING ON THE FARM

From eight to sixteen teams are used to bring the straw from the country to the R. M. Kellogg Farms, Three Rivers, Michigan. The horses and wagons go astride the rows and the straw is thrown off in piles ready for the men with forks, who scatter it evenly over the plants to a depth of three or four inches. Great as is the cost of this work, it more than pays for itself.



one of the greatest importance. The bisexual plant has both anthers and pistils, and will therefore pollinize itself, although experiments made on our farms indicate that even bisexuals will be more perfectly fertilized when set near other bisexuals of the same season. The pistillate varieties have no anthers—make no pollen—and, therefore, will yield no fruit except when properly mated with bisexuals. The fact that the pistillate exhausts none of its vitality in pollen production, and, therefore, is enabled to develop to the full its fruiting powers, makes the pistillate, as a rule, a heavier yielder than the bisexual. However, in setting pistillates it is absolutely necessary that they shall be set near enough to bisexuals of the same blooming period to insure perfect pollenization. The grower may place one row of pistillates between flanking rows of bisexuals, or two rows or three rows of pistillates, as the pollen will carry readily over three rows of pistillate from the flanking rows of bisexuals. One excellent plan is to set plants in the following order: Row one, early bisexual; rows two, three and four, medium pistillate; row five, late bisexual. In this way the bloom of the early bisexual will fertilize the earliest bloom of the medium pistillate, and the late bisexual will do the same for the latest bloom of the medium variety.

Having selected the plants, the grower will proceed to get his soil in condition. Over a large portion of the country—and we believe this is likely to be true of the Pacific Coast and the Intermountain states as well as in the states east of the Missouri—the very best preparation for strawberries is a liberal coating of barnyard manure, spread over the land at any time previous to plowing. The strawy part of the manure adds humus to the



Dunlap  
plant  
Photo  
April 7, 1910



Warfield  
plant  
Photo  
April 7, 1910

Copyrighted 1910 by R. M. Kellogg Company

**PLANT SHOWING HOW TO REMOVE BLOSSOMS**  
When setting your plants see that the crown stands above the soil, as shown here. About two weeks after the plants are set they will start sending out fruit stems. As soon as the buds begin to open pinch or cut off as shown by the dotted lines in the illustration. Don't let a blossom fruit.

soil, and the plant-food elements contained in the other portions of the fertilizer will supply the needs in that direction. Do not plow too deeply, but deep enough for a soft, friable place for the roots of the plants to develop in. Just as soon as the plants are in the ground cultivation should begin, and the plants should be cultivated once every ten days during the first season, and in case of rainfall they should be cultivated just as soon after the rain as possible, or as soon as the soil will crumble in the hand. Cultivation performs very many valuable functions. It prevents the formation of crust; it creates and maintains a blanket of dust over the surface of the ground, which aids in holding moisture in the soil

and in preserving a normal degree of temperature; it supplies bacteria with the necessary quantities of air; it destroys weed seeds while in the germinating stage; it mixes the fertilizer with the soil, so that the bacterial germs may work up the fertilizer into more readily available forms of plant food; it keeps the strawberry runners from overflowing into the spaces between the rows. And, as we have pointed out above, in the case of the orchards it actually aids in the development of the orchard trees.

Very soon after the plants start growing they will begin to put forth runner plants. In the orchard we should favor the single-hedge row. Under this system only two runners are permitted to

develop, and these are layered in line with the mother plant in the rows. Where this plan is followed the rows should be thirty-six inches apart and the plants set twenty-four inches apart in the row. After the two strong runner plants have been formed all additional runner plants should be promptly pinched off, so that the mother plant may proceed in the development of a powerful fruiting system without further exhaustion in production of runner plants. Then there are the blossoms which also must be removed the first season, so that seed exhaustion shall not weaken the fruiting power of the mother plant. Never permit a blossom to mature during the season in which the plant is set. The next season, however, every blossom should be encouraged to develop a big red, ripe strawberry.

Whether the grower lives in a region of frosts or not, he should mulch his plants with straw or coarse hay. Where frosts are severe the mulching should be applied



Copyrighted 1910 by R. M. Kellogg Company

#### OUR SPRAYING MACHINES AT WORK

The R. M. Kellogg Company's (Three Rivers, Michigan) thoroughbred plants are kept continually coated with bordeaux mixture and arsenates during the entire growing season, which guarantees the plants to be perfectly free from insects and fungus diseases. An Idaho state inspector recently ordered a fruit farmer to destroy all the nursery stock which he had just set out on a twenty-acre tract because everything he had set was diseased. The insurance you have against such disease when you purchase R. M. Kellogg Company's pure-bred plants is worth many times what you pay for the plants, and you cannot afford to take the risk of possible loss.

immediately after the first heavy freeze occurs. Where there is no frost, or very light frost, the mulching over the plants need not be followed, but the spaces between the rows should be covered after the last cultivation. The importance of mulching cannot be overestimated. In the colder latitudes mulching prevents freezing and thawing; freezing and thawing cause alternate contraction and expansion of the soil, and this results in the straining and breaking of the roots of the plants, which, of course, greatly affects fruit production. Mulching retains moisture in the soil, and, where the sun shines hot, protects the roots from injury. But to the grower of strawberries for market, if there were no other advantage than that the mulching insures clean, bright berries, this of itself would amply



#### LAYERING RUNNER PLANTS

Just as soon as the young plants are formed, draw soil or lay a small stone on the runner cord just back of the node, or young plant. This holds it in place and encourages the roots to take immediate hold upon the soil, thus relieving the strain on the mother plant, and at the same time it develops a stronger runner plant. It also fixes the plant just where you wish it to be in the row.



repay all trouble and expense one must go to in doing this feature of the work.

The grower who fails to supply clean fruit, free from grit and sand, fails at the crucial point in his work, and need never expect to command high prices for his product. Another advantage of mulching will be found at the fruiting season, when the mulching keeps down the weeds and makes cultivation unnecessary at the period when cultivation may, if practiced too often, be actually discouraging to the development of large crops of fruit. Wherever cultivation is necessary in the fruit-growing season—indeed, only when the grower sees that weeds threaten serious injury should cultivation be done—then the thing to do is to part the mulching in the middle of the row, cultivate thoroughly and then replace the mulching over the cultivated soil.

If the growers of the Pacific Coast and Intermountain states will adopt this system, which is becoming so general throughout other sections of the country, and will follow the simple rules here indicated they may with confidence count upon years of profit where otherwise there would be years of waiting, representing large outlays for the running expenses; and in every other way will their work be more satisfying.

The growing interest in strawberry production throughout your great region has led the R. M. Kellogg Company to establish a branch nursery a few miles south of the City of Portland, Oregon, and this year the company will ship to its Pacific Coast customers several hundred thousand plants. Next year the nursery will be in full swing, and those in the Pacific Coast region who prefer to secure their plants grown nearer home will enjoy at once this great advantage, and also will have the satisfaction that they come from growing fruit from the Kellogg strain of plants. In many sections of the Coast country, where planting may begin in February and March, the company will be able to furnish the plants at the desired seasons. From the encouragement already received the future of the Pacific Coast branch would seem to be completely assured, many of the more prominent strawberry growers having already expressed themselves as being highly pleased with this move on the part of this great strawberry breeding firm, and have extended them a hearty welcome to this great Northwestern commonwealth.



WARFIELD PLANT PHOTOGRAPHED SEPTEMBER 7, 1910, SHOWING SAME PLANT AFTER FIVE MONTHS' GROWTH  
Grown by R. M. Kellogg Co., Three Rivers, Michigan



PROPERLY PRUNED PLANT



AN R. M. KELLOGG COMPANY THOROUGHbred BEFORE PRUNING



DUNLAP PLANT PHOTOGRAPHED SEPTEMBER 7, 1910, SHOWING SAME PLANT AFTER FIVE MONTHS' GROWTH  
Grown by R. M. Kellogg Co., Three Rivers, Michigan

# SPRAYING FOR CURCULIO AND CODLING MOTH

BY ESTES P. TAYLOR, MISSOURI STATE FRUIT EXPERIMENT STATION, MOUNTAIN GROVE MISSOURI. Continued from February Number

**I**N the table accompanying this article is shown in detail the actual cost of material and application per tree in plat 2, which was sprayed three times at dates as indicated before. The actual cost is also expressed in terms of cost per acre on a basis of sixty-five trees per acre. The first application was one of arsenate of lead with the addition of a weak bordeaux mixture, and the two following sprays were of arsenate of lead alone:

It will be seen that the first spray, when a coarse nozzle was used and the trees drenched, required a great deal more liquid than the two following ones. At the first application the average cost per tree for material was 4.9 cents, or \$3.19 per acre. The cost of material and labor per tree was 8.76 cents, which brought the combined cost of the treatment to \$5.70 per acre. For the second application, when a mist spray was used, and less material applied, the combined cost of material and labor was \$2.63 per acre, or only about one-half the expense of the first spray. The total cost of the third application was \$2.64 per acre. This brought the total expense of the three sprays in plat 2 to a trifle less than 17 cents per tree, or \$10.97 per acre.

A comparison of this cost of spraying, with the direct profit secured, is of interest at this time. As stated, many of the Ingram trees in this plat were much undersized for their age, and the yield was correspondingly light. Some were overcrowded so much that the fruit was undersized, while others bore only a few apples; the latter, however, requiring their full quota of spray. The average yield of picked fruit in this plat for the trees bearing fruit was a trifle under two bushels per tree, which, at sixty-five trees per acre, yielded 130 bushels per acre. 77.9% of these were No. 1, which,

at \$1.32 per bushel, brought \$133.72 per acre. The balance, at 66 cents per bushel, brought \$18.94, or a total of \$152.66 per acre gross. As shown in Table VII, the financial returns for the crop in plat 2 were exactly doubled by reason of the sprays given. After deducting \$10.97 per acre as the cost of the spraying, a net cash profit by virtue of was secured. This means that for every dollar expended for spraying after the plan followed in plat 2 seven dollars was saved in the price secured for the fruit. These results were secured upon trees which bore but two bushels of fruit per tree. Upon larger trees yielding heavily it is not unlikely that the profit from such spraying would have exceeded the cost of the spraying ten or twenty fold. The profits accruing in this instance, though yield of the trees was so light, was found to be sufficient upon a twenty-acre tract in one year to pay for a \$300 gasoline power spray outfit and leave more than a thousand dollars clear gain besides. Upon orchards bearing as much as 500 bushels per acre of high priced fruit the ratio of profit from such a scheme of treatment would make this estimate seem inaccurate from its conservativeness.

So much has been written about the relation of codling moth spraying and the calyx cup that it is probable that most fruit growers are already aware of its importance. Since a very high per cent of the codling moth worms enter the apples at the blossom end it is highly important that the calyx be filled with spray so that the worm may be poisoned as it takes its first meal. But since only about a week elapses between variety may be lengthened to ten days.

the dropping of the petals from the bloom and the closing together of the sepal tips over the calyx cavity, the time allotted for such sprays is indeed limited. Again, the climatic conditions of some seasons shorten this period in which spraying for any one variety may be done sometimes to five days, or the period in other seasons for the same



W. H. BURKE  
Secretary and Treasurer of  
R. M. Kellogg Company  
Three Rivers, Michigan



FRANK E. BEATTY  
President and Manager of  
R. M. Kellogg Company  
Three Rivers, Michigan

The Jonathan retains its petals longer than some varieties, but closes the calyces rather quickly, while Yellow Transparent and Ingram retain an open calyx over a relatively long period, and so allow more time for spraying. Pears, which are infested by codling moth less seriously than apples, keep their calyces open much longer—in some varieties never becoming entirely closed.

Some seasons there is a difference of ten days or two weeks between the opening of blossoms of early blooming varieties, such as Early Harvest or Jonathan, and the first flowers on late blooming varieties, such as Rome Beauty, Geniton or Ingram. In orchards of mixed varieties the early blooming ones must, therefore, be sprayed first. The time, in such cases, in which the first spraying could be done would be lengthened, and more work could be done with a single spraying apparatus than when the orchard consisted of only one variety. It is evident, therefore, that the fruit grower must make a close study of the blooming periods of varieties in his orchard and make his estimates accordingly on the time allotted in which this spraying may be done. He must then provide apparatus sufficient to thoroughly spray the orchard within this limited time.

Examinations of apple blossoms show other details bearing upon this important first spray. The central or terminal bud in each fruit cluster is normally the first one to open its bloom. From it the petals are first dropped, and it is generally these central



Copyrighted 1910 by R. M. Kellogg Company

## PROPER METHOD OF HEELING-IN STRAWBERRY PLANTS

First make a furrow or V-shaped trench in the shade. Set the bunches in the trench with the crowns just above the top of the trench, as shown in Figure 1, allowing the tips of the roots to reach down toward the bottom of the trench, then with a knife cut the strings that bind the bunches and spread the plants, as shown in Figure 2, being careful the roots are well spread, so the soil will come in contact uniformly with all the roots. Now fill in the trench, pressing the soil firmly against the roots as you fill it in. When completed your plant should look as shown in Figure 3. Should weather conditions indicate freezing, cover lightly with straw.



SUPERLATIVE  
RASPBERRY

blossoms that set the highest percentage of fruit in each cluster. This fact makes it of essential importance that the sprays be applied with these blossoms particularly in mind. Spring frosts at the time the central blossom is open and lateral ones are still in the bud, by destroying the ones which are farthest advanced, sometimes reversing the ratio, however.

The direction of the bloom has much to do with the manner of applying the spray. When the calyces are in ideal condition for spraying about one-third point in the downward direction and about two-thirds upward, and, of course, many of these point outward in all directions. Sprays must, therefore, be applied from every direction in filling the calyx cups. A higher per cent point upward in the center and top of the tree than on the outer limbs; also a higher per cent point upward as the calyces close than when the blossoms first open, due to the strengthening of the stems of the growing apples. When the apples attain sufficient weight their stems yield and they again reverse the direction of the blossom end and hang downward.

Spraying when the trees are in full bloom is never to be recommended. It is likely to be destructive to honey bees at that time, and is not when the calyx cups hold the most spray. By the time 90% of the petals are off the bees will have largely abandoned the trees, and the spraying may be safely begun. However, if arrangements are so that the orchard can be covered in a short time it will be better to postpone the spraying even later, until the green sepal tips have begun to draw together, forming tube-like calyx basins, holding a maximum amount of spray. The spraying should not be delayed so long that any of the calyces will close before treatment, and due allowance must be made for rains and other hindrances which might make very costly delays at this time.

Although the ideal time for spraying is after the calyces have drawn into deep tubes, at that time it is also even more necessary that a coarse spray at high pressure be directed straight down into them. The following general recommendations for times of sprays are given:

It is to be assumed that a fungicide treatment with the standard bordeaux mixture is to be applied before any arsenical sprays are used for curculio or codling moth. This spraying would be aimed at apple scab primarily, but could also be used in connection with arsenate of lead should any bud or foliage-eating larvae, such as canker worm, apple tent caterpillar, bud moth, etc., be present. This dormant spray is to be applied after the cluster buds have opened, but prior to blooming. Orchards sprayed very late in the spring with dormant lime-sulphur sprays would probably not require the bordeaux mixture before bloom.

Following the dropping of the petals from the bloom and before the closing of the calyx cups, apply the first curculio and codling moth spray. This is the most important of all sprays applied against these pests. It is the spray referred to in the subject next preceding the last. It is applied at a time long before the first codling moth eggs are laid, but is for the purpose of filling the calyces before they close with a poison bait to be eaten later on by the codling moth worm as it attempts to enter the blossom end of the apple. Two-thirds of the first generation worms, or more, and many of the second enter at this point. Some adult curculio are probably out of hiding and feeding at this time. If any spray is omitted or slighted it should not be this one, for the success of the season's spraying for codling moth, and to a considerable extent curculio, depends

upon this application. It should be of arsenate of lead and applied in a most thorough manner in a coarse spray under a high pressure, driven squarely into the calyx cups. In case the variety sprayed is not very subject to scab, omit bordeaux mixture entirely from this application, since the extra amount of liquid applied, if containing full strength bordeaux mixture, would be likely to cause burning of the leaves or russetting of the fruit. If bordeaux mixture is added at all it should be in very dilute strength.

In ten days or two weeks following the first apply the second treatment of arsenate of lead. This application, for most varieties in average seasons, will be after the calyx cups have closed and considerably in advance of the hatching of the first codling moth worms. In the West, where codling moth is the principal pest, and where curculio is absent, this spraying is generally omitted. In Missouri, where curculio is common, it is a necessary treatment, since it is at this time that the feeding punctures of the plum curculio are first being made in apples, which are then about the size of peas or small marbles. This spray being for the purpose of coating over the surface of the miniature apples, a mist spray, applied under a high pressure, is used, and with the less copious application bordeaux mixture may be added at a diluted strength (one-half to one-third regular strength) against scab.

Use arsenate of lead at the usual strength from ten days to two weeks following the second. This spraying will fall about three or four weeks after the petals drop, and will be when apples of standard winter varieties approximate a diameter of three-fourths to one and one-half inches. Curculio food and egg punctures are beginning a period of abundance at this time, and the first codling moth eggs are beginning to hatch, and the worms will soon be entering the apples. It will be seen, therefore, that this spraying is a very timely one for both of these insects. Orchardists familiar with the appearance of the eggs of codling moth as they appear at this time



RASPBERRY FIELD OF G. E. MERRILL IN BLOOM, HOOD RIVER, OREGON



usually upon the upper surfaces of leaves near fruit, have another guide as to the time this spray should be applied, which, if followed, would permit the application of the spray when the eggs begin to appear, and thereby would place a goodly coating of poison over fruit and leaves ready for newly hatched worms. To watch and apply this spraying at the time the first codling moth worms are seen entering the apples is sometimes resorted to by orchardists, but it is less reliable than anticipating the oncoming generation of worms by the discovery of the unhatched eggs. Observations upon the exact date of appearance of either of these stages of the codling moth on account of varying seasons are often useful guides to orchardists. This application should be a mist spray, the object being to thoroughly coat the surface of every apple. This is necessary against codling moth, since sometimes as many as 30% of the first generation worms do not enter the apples at the calyx, but at

ture sprays will have to be given later. Respraying after rains, no matter how severe, has been found unnecessary with arsenate of lead, provided the poison has become thoroughly dried upon the foliage or fruit before the rain.

In the control of these pests the necessity of later sprays might be brought about from unavoidable delays in the early sprays, such as the breakage of machinery, unusually unfavorable weather, failure of the arrival of apparatus or insecticides at the critical time, etc., but every possible precaution should be taken by the grower to avoid such delays. The previous infestation of the orchard with either curculio or codling moth will influence to some extent the number of sprays required. It is encouraging to note that the successes from spraying of one year are reflected in fewer sprays required for the protection of the crop the year following. The isolation of the orchard from woods, which offer hibernating quarters for curculio, may alter the number of sprayings required, as may its proximity to other orchards that are badly infested with this pest. Methods of handling one's own orchard, such as cultivation and destruction of wind-falls, may have an influence. United effort in any community in controlling these pests makes the battle an easier one, but it is not impossible for a single fruit grower, in

a locality of neglected orchards, by his individual efforts to profitably overcome these two pests. A year of failure in fruit crop does unquestionably reduce the infestation of codling moth for the coming year, but it cannot be hoped that because the apples were too scattering upon the tree to yield any appreciable



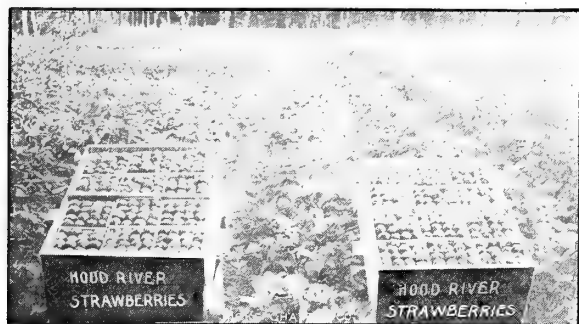
STRAWBERRY FIELD WITH PICKERS AT WORK, SHOWING PACKING SHED, HOOD RIVER, OREGON

return that enough did not mature to carry the insect through. In years following fruit failures the spraying must not be neglected.

Variety of fruit also influences infestation, and consequently the number of sprays. Some varieties are badly infested with curculio, others only moderately so. Codling moth is far more serious upon the Pewaukee, Wolf River and Isham Sweet than upon some others. Jonathans are usually more severely attacked than Ben Davis or Gano, and Winesap shows a decided resistance to codling moth compared with others, and there are many differences of this kind to be noticed.

It cannot be doubted that the single spraying, properly applied at the time the blossoms fall, is completely controlling codling moth in certain cases in Western and Northwestern states. It is this spraying which unquestionably plays the most important part in fighting the codling moth in Missouri. In this state, with curculio also to combat, and with some early worms of codling moth entering at the side rather than at the calyx end of the apples, two additional early sprays of arsenate of lead will usually be necessary.

There is probably no better insecticide for codling moth and curculio spraying



UPPER HOOD RIVER VALLEY, OREGON, STRAWBERRY PATCH OWNED BY JONES CASH STORE PORTLAND, OREGON

the side, and the poison placed in the calyx at the first spray could not be expected to destroy worms which fed upon the surface elsewhere. If necessary for leaf spot or apple blotch diluted bordeaux mixture could be added to the arsenate of lead.

If codling moth infestation should be very serious and curculio very slight, the second application, as given above, could well be omitted, making this one the second. In that case the third spray could be delayed two weeks and applied when the maximum number of codling moth eggs of the first generation were being laid, which would be about six weeks, instead of four weeks, following the shedding of the petals.

The three sprays, as recommended above, if thoroughly applied, will be sufficient to control codling moth and curculio under average conditions in Missouri. All of these sprays are aimed at the destruction of the first generation of codling moth worms and the curculio beetles which emerge in the spring from hibernation. The success of this accomplishment will, therefore, largely determine the extent of the damage from the second brood of the codling moth and the continuation of the puncturing of the fruit by the curculio late into the summer. In orchards where bitter-rot makes its appearance later, or where apple blotch is very serious, bordeaux mix-



VISITING DELEGATES AT THE WASHINGTON STATE HORTICULTURAL SOCIETY MEETING HELD AT PROSSER HIGH SCHOOL, PROSSER, WASHINGTON JANUARY, 1911



than a good brand of commercial arsenate of lead. It is convenient to use, the white paste having only to be mixed with a small amount of cold water and added to the spray tank containing the balance of the cold water for dilution.

There are many different brands upon the market, and a number of them were tested in spraying experiments in 1908. In this comparative test each was used at a strength of two pounds to 50 gallons of water. Following is a list of the brands tested and the manufacturing companies furnishing them:

Eagle—Adler Color and Chemical Works, 100 William Street, New York.

Disparene—The Bowker Insecticide Company, 43 Chatham Street, Boston.

Star—Fred L. Lavanberg, 100 William Street, New York.

Grasselli—Grasselli Chemical Company, Cleveland, Ohio.

Rex—The Rex Company, Omaha, Nebraska.

Target—American Horticultural Distributing Company, Martinsburg, West Virginia.

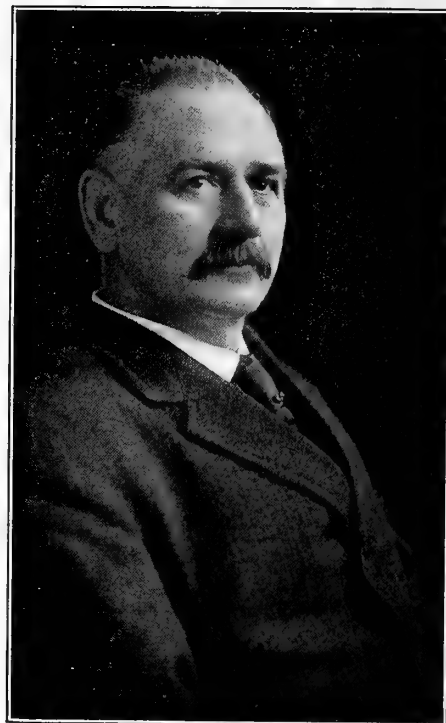
Swift—Merrimac Chemical Company, 33 Broad Street, Boston.

Sherwin-Williams—Sherwin-Williams Company, St. Louis.

Samples were taken from each of the above insecticides and submitted to the Bureau of Chemistry of United States Department of Agriculture for analysis. Through the courtesy of J. K. Haywood, chief of the miscellaneous division of this bureau, the analysis of the samples used by the writer is given in Table IX.

In this connection it is interesting to compare these analyses with what is considered an arsenate of lead of proper grade. Within the past year, at a conference of state and government insecticide chemists, entomologists and chemists of insecticide manufactories, a standard for insecticides was established and included in a proposed national insecticide law. The requirements for commercial arsenate of lead were as follows:

An arsenate of lead shall be deemed adulterated: first, if it contains more than 50 per cent of water; second, if it contains total arsenic equivalent to less than 12½ per cent of arsenic oxide ( $As_2O_5$ ); third, if it contains arsenic in water soluble forms equivalent to more than 0.75 per cent of arsenic oxide ( $As_2O_5$ ); fourth, if any substances have been



MR. E. F. BENSON

Presiding officer of recent Washington State Horticultural Society Meeting  
Prosser, Washington

Continued from February number

TABLE VIII—COST OF SPRAYING INGRAM APPLES IN PLAT TWO

	First Spray	Second Spray	Third Spray	All Sprays
Gallons of spray per tree.....	4.74	3.67	3.44	11.85
Cost of spray mixture per tree (cents).....	4.90	2.20	2.00	9.10
Cost of spray mixture per acre (dollars).....	3.19	1.43	1.30	5.92
Expense of applying mixture per tree (cents).....	3.86	1.85	2.06	7.77
Expense of applying mixture per acre (dollars).....	2.51	1.20	1.34	5.05
Combined cost of material and application per tree (cents).....	8.76	4.05	4.06	16.87
Combined cost of material and application per acre (dollars).....	5.70	2.63	2.64	10.97

TABLE IX—ANALYSES OF ARSENATE OF LEAD

Contents	Eagle	Disparene	Star	Grasselli	Rex	Target	Swift's	Sherwin-Williams
Moisture .....	41.36	21.41	48.34	34.24	35.75	42.61	41.03	41.46
Total lead oxide ( $PbO$ ).....	37.79	46.80	36.88	45.64	44.64	39.49	38.46	45.62
Total arsenic oxide ( $As_2O_5$ ).....	17.38	22.11	11.98	16.90	16.43	14.44	16.24	6.03
Water soluble impurities, exclusive of $PbO$ and $As_2O_5$ .....	0.76	5.68	1.04	0.75	0.67	1.06	1.45	3.35
Water of constitution and undetermined.....	2.71	4.00	1.76	2.47	2.51	2.40	2.82	3.54*
Soluble lead oxide .....	0.48	0.67	0.44	0.58	0.40	0.32	0.44	1.61
Soluble arsenic oxide.....	0.82	0.06	0.04	0.90	0.87	0.41	0.71	0.02

\*Also carbon dioxide. Lead carbonate is present in the mixture.

TABLE X—ARSENATE OF LEAD AND PARIS GREEN

For dates and number of times sprayed, see Table I, printed in February number

Apples Counted:	Plat 6 Check Not Sprayed	Plat 5 Paris Green	Plat 4 Arsenate of Lead
Total .....	4534	4544	6442
Windfalls .....	2065	1143	1705
Picked .....	2469	3401	4737
Windfalls—Per cent with:			
Curculio crescents .....	18.74	3.94	3.17
Codling moth worm holes .....	7.89	.09	.18
Curculio crescents or codling moth worm holes.....	25.61	4.02	3.34
"Specks" from curculio or codling moth.....	7.02	.96	1.58
Other chewing insect injuries.....	29.73	16.88	15.01
Spray burn at calyx.....	0.00	17.41	1.64
Picked Fruit—Per cent with:			
Curculio crescents .....	45.50	7.67	3.80
Codling moth worm holes.....	14.90	.47	.03
Curculio crescents or codling moth worm holes.....	53.90	7.99	3.90
"Specks" from curculio or codling moth.....	3.20	1.67	1.50
Other chewing insect injuries.....	3.07	3.20	3.50
Spray burn at calyx.....	0.00	22.46	1.40
Both Windfalls and Picked Fruit—Per cent free from:			
Curculio crescents .....	66.66	93.27	96.37
Codling moth worm holes.....	88.29	99.63	99.75
Curculio crescents or codling moth worm holes.....	58.94	93.00	96.18
"Specks" from curculio or codling moth.....	95.02	98.50	98.43
Other chewing insect injuries.....	84.79	93.35	93.40
Spray burn at calyx.....	100.00	78.81	98.58

Formulas used: Paris green, 6 ounces; lime, 4-6 pounds; water, 50 gallons. Arsenate of lead, 2½ pounds to 50 gallons of water.



MAMMOTH BLACKBERRY

mixed and packed with it so as to reduce, lower or injuriously affect its quality or strength; provided, however, that extra water can be added to lead arsenate (as described in this paragraph) if the resulting mixture is labeled lead arsenate and water, the percentage of extra water being labeled and correctly stated on the label.

Since the arsenate of lead is sold by weight, usually as a paste, the strength of the product may be reduced by manufacturers by the addition of water. Fruit growers should, therefore, bear this fact in mind. The table shows all samples within this standard indicated in respect to moisture, but a comparison of the moisture contents of the samples analyzed should not be considered, since the arsenates before the samples were taken were known to have suffered in loss of moisture by evaporation or leakage in varying amounts, owing to the different kinds of containers in which they were received. The content of arsenious oxide, it will be seen, varied for six of the eight samples from 14.14% to 22.11%. Only two samples of the eight examined were below the standard for arsenious oxide. Sample No. 6453 was but slightly deficient in arsenious oxide, while No. 6458 was greatly deficient in this respect, showing only 6.03%. Since the soluble arsenic oxide is considered the property likely to burn the

fruit or foliage, a minimum amount in arsenates of lead is desirable. In no case did the amount equal 1%, and in some the analysis showed a remarkably low percentage. Practically no injury followed the use of any.

Quotations of the price of the different kinds of arsenate of



Photograph by C. C. Hutchins

MISS EDNA CAMERON  
Publicity Secretary and Manager White Salmon  
Development League  
White Salmon, Washington

lead used showed a variation about as follows: In barrels of about 400 pounds, 9 to 15 cents per pound; in 100-pound kegs,  $9\frac{1}{2}$  to 16 cents per pound; in 5 to 20-pound buckets, 11 to 20 cents per pound, and in single pound cans, from 20 to 25 cents.

Although the quality of arsenate of lead upon the market in Missouri is upon the whole of a high standard, it will be advisable for purchasers, until a national or states law has been enacted fixing a standard of purity, to demand a certificate of analysis from the manufacturer covering each package, guaranteeing a quality of product at least up to the standard for arsenate of lead as noted elsewhere.

The convenience attending the use of arsenate of lead, the fineness of its particles, giving it great adhesiveness, in spite of washing rains, and its power of suspension in the spray tank, thus insuring an easier and more uniform distribution of poison over the sprayed surface, commend its use to fruit growers. From the insolubility of its arsenic, when carefully made, it is safe to use in large quantities and by inexperienced persons, without danger of burning the fruit or leaves. Considering its effectiveness, together with the other advantages in its favor already cited, it is as cheap, if not cheaper, insecticide than paris green, with which it is further compared later on in this bulletin.

Instead of purchasing the ready-made commercial brands of lead arsenate some fruit growers prefer to make up their own insecticide, which may be easily done. Home-made arsenate of lead was prepared and used by the writer in comparison with different brands of commercial arsenate of lead mentioned with

practically as successful results as was secured with the best of the commercial arsenates, and with no attendant damage from burning. The following formula and method of preparation was used, and is recommended: Lead acetate (sugar of lead), 25 ounces; sodium arsenate, 10 ounces; water, 50 gallons.

The above amounts of lead acetate and sodium arsenate are first dissolved each in a gallon of water contained in separate wooden vessels. When dissolved, pour one solution after the other into the spray barrel with 48 gallons of water, thus making 50 gallons of spray. For a 200-gallon tank use four times the above amounts. Hot water dissolves the materials more rapidly. Upon pouring the two solutions together in the spray tank a very fine, white precipitate of arsenate of lead is immediately formed, which keeps in suspension well while being sprayed.

The home-made arsenate of lead has the advantage over the commercial product in that if the two chemicals used in making up the spray are pure the resulting lead arsenate will be of known composition. Acetate of lead (grade known as brown-broken) may be had for about nine cents per pound, and arsenate of soda (commercial) for about 14 cents per pound, at which prices 200 gallons of spray would cost about 76 cents. Two hundred gallons of spray made up with eight pounds of a commercial lead arsenate at 12 cents per pound would cost 96 cents. The amount saved by the use of the home-made product is not appreciable when the added cost of trouble of dissolving the chemicals and mixing the solution is taken into account. In the home-made product acetate of soda and acetic acid are left in solution and sprayed upon the trees, although they are not properties yet known to have any particular insecticidal value in this connection. Their extraction would not be practicable for the farmer.

There are many fruit growers who still adhere to paris green, and who, it may be said, are securing results satisfactory to them. The superiority of arsenate of lead over paris green is now recognized,

however, in most states where these arsenicals have been compared. This difference for the purpose of codling moth and curculio spraying was conclusively brought out in the past season's experiments, where two blocks of trees of about equal size were given sprayings practically identical in every respect, except that in one paris green was used and in the other a good brand of commercial arsenate of lead. Detailed records were made upon the various kinds of insect injuries in these two plots, and are shown in Table X.

In the picked fruit sprayed with arsenate of lead, 3.8% bore either curculio crescents or codling moth worm holes, while 7.67% bore these injuries in the plot sprayed with paris green. Including both windfalls and picked fruit, 96.18% in the arsenate of lead plot and 93% in the paris green plot were free from these injuries. This difference, though practically only 3%, in cases of heavy yield of high priced fruit, would justify the use of the lead, though the cost of the paris green might be slightly less. Many fruit growers have continued to use paris green on account of its cheapness. In consideration of the raise in the price of paris green in recent years, the reduction in the price of commercial arsenate of lead and the knowledge that arsenate of lead can be used at very much weaker strengths than formerly recommended, the arsenate of lead is but little, if any, more expensive than paris green. If the arsenate of lead had been no more effective than the paris green it would have been preferable on account of the serious burning of the apples at their blossom ends by the paris green.

This burning seriously damaged 22.46% of the picked apples which had been sprayed with paris green, as referred to under the following subject.

The burning effect of paris green upon foliage and fruit was well exemplified in the plot sprayed with it in 1908. Every known precaution was taken to avoid injury. The paris green was purchased from a reliable firm and was guaranteed to be of highest quality. At the first spraying it was used six ounces to 50 gallons, in connection with bordeaux



BLACKBERRY FIELD OF A. F. STREBLOWS IN BLOOM, SUMNER, WASHINGTON

mixture containing an excess of lime. As a precaution against burning in the second and third applications 16 to 24 pounds of lime were added to each 200 gallons of spray with paris green at the above strength. In spite of these precautions, as early as June 11 apples were noted in the paris green plat with blackened areas about their blossom ends. These blackened areas increased in size and became more conspicuous as the apples grew. By picking time some of the areas now shriveled had extended about the blossom end until it covered over a third of the surface of the fruit. In some cases the burned tissue at the end of the apple had dried and separated from the normal portion and fallen away, leaving the seeds exposed at the bottom of circular cup-like depressions. Some of the apples less seriously burned showed deeply depressed calyx basins. Nearly one-fourth of the picked fruit from that portion of the orchard sprayed with paris green was so seriously damaged from this cause that it was rejected from the first grade, and some reduced to culls. The rainy weather prevailing at the time nearly all the sprays were applied intensified the damage from the paris green, but the same unfavorable weather conditions in the adjoining block treated similarly with arsenate of lead, failed to develop more than about 1% of apples blackened at the blossom end.

The burning of apples from arsenicals of any kind produces the typical blackened areas. Some of the apples burned in this manner by paris green are shown in Fig. 13. Arsenical burning is very different from bordeaux injury. The latter does not produce the blackened areas at the blossom end, but instead leaves the fruit roughened and russeted. The two kinds of injury are so different in appearance that they need never be confused. Some varieties of apples are more susceptible to burning from arsenicals than others, and, like bordeaux injury,

is sometimes increased by rainy weather at spraying time. Though a bordeaux of only three pounds blue vitriol and four pounds quick lime to 50 gallons of water was used at the time the petals fell, considerable of the bordeaux russetting appeared upon the trees sprayed first, due to a heavy rain. If bordeaux mixture has to be used at all at the time of the drenching spray immediately following the dropping of the petals, it should be in a very dilute strength. It would be better, in avoiding the russetting, to use the full strength bordeaux mixture earlier, while the trees are dormant, entirely omitting it at the time of spraying to fill the calyces.

Properly made brands of commercial arsenate of lead may be used at strengths greatly exceeding that necessary for the spraying of the apple without danger from burning, though used without the addition of lime, though a few instances of burning with arsenate of lead have been observed. Paris green should only be used with the addition of lime, and even then burning is likely to occur. A property of arsenical sprays which induces burning is supposed to be the water-soluble arsenious oxide. The case of burning cited resulted from the use of paris green which contained, as shown by analysis by J. K. Haywood, of the Bureau of Chemistry, 2.40% water-soluble arsenious oxide, which amount is not excessively high for paris greens. This amount, however, is much in excess of that to be expected in lead arsenates, as will be noted from the previous discussion. The average amount of water-soluble arsenious oxide from eight different brands of commercial arsenates of lead tested was but forty-eight hundredths of one per cent.

Arsenical poisoning of fruit trees from absorption of the arsenic through the roots or by irritation at the crown of the tree where an excessive amount of spray is allowed to collect, has been sus-



IRRIGATING THE STRAWBERRY FIELD

pected in other fruit sections, but under soil conditions in Missouri, and with the methods of spraying recommended here, no such trouble has been observed or need be feared.

Although an arsenate of lead spray is primarily an insecticide there seems to be good evidence that it also possesses some fungicidal value. Aside from protecting the trees from leaf-eating insects the foliage has been held upon the trees in a vigorous condition late into the fall by spraying with arsenate of lead only. Unsprayed trees adjoining were stripped of their foliage early in the fall by fungus diseases. In the experiment at Olden the beneficial effect of the single early spraying with a dilute bordeaux mixture and two later sprays of arsenate of lead was most noticeable. Foliage in a very healthy condition was retained upon the sprayed trees well into November, while many unsprayed trees were practically stripped of their leaves by October.

Thoroughness in applying the spray has more to do with the results obtained than the kind of spray used. It is safe to say that there are more failures from insufficient or poorly applied sprays than from all other causes combined.

For the first treatment following the dropping of the petals, a tree is not thoroughly sprayed until the liquid has been placed into the open calyx cup of every small apple on the tree. Calyx tubes point in all directions upon the tree, up, down and at all angles, and it is manifest that the spraying should not only be done from all sides of the tree, but from above and below. For this a nozzle throwing a coarse spray, such as would be given by a bordeaux, a coarse Vermorel or angle Friend, is desirable. The spray should be driven with a high pressure and the poison forced deep down into the calyx chambers. If the tree is small it may be sprayed from the ground by the use of long spray rods and nozzles turned at an angle with the pole, or if the nozzle used does not permit of such adjustment a crook should be made at the tip of the pole so as to throw the spray downward. Only small trees can be sprayed from the ground. All others must be reached from a high tower built upon the spray outfit. Trees properly pruned, with low heads and open centers, are sprayed with much less material and cost. The nozzles should



Photograph by C. S. Reeves  
STRAWBERRIES IN YOUNG ORCHARD OF DR. SMITH, WHITE SALMON VALLEY  
WASHINGTON

be pushed through the branches from every side. It is almost impossible for the nozzleman standing upon the ground to accomplish thorough work without getting up under the branches, and in so doing he must expect to get wet. Material used per tree at this treatment may almost double that used at sprays given later. With a properly made lead arsenate no damage to the tree or fruit will follow such spraying. Bad weather is likely to prevail, but this spraying should be done on time at all hazards. Every tree bearing fruit should be thoroughly sprayed, and the foliage should also be covered. If trees bear no fruit they may be omitted, for codling moth eggs are seldom laid upon barren trees, and the larvae do not come to development upon the leaves or twigs. A few very rare exceptions to this have been reported from the laboratory.

For all sprays made later, after the apples have formed, a fine mist spray is desirable. The object in the later sprays is to place an even coating of poison over each fruit. The fine spray-drops should be placed thickly on the surface without running them together or washing. The small apples, when covered with pubescence, retain the spray better than when their surface becomes smooth. The nozzles must be moved quickly from branch to branch to avoid waste of material. Long spray poles and nozzles turned at an angle with the pole will make thorough spraying possible during windy weather when it would otherwise have to be postponed.

Anything but the best kind of spraying apparatus is very poor economy. As stated before, lack of thoroughness in spraying is the principal cause of poor results, and it may also be said that improper spray outfits are the greatest handicaps to thorough work.

The size of the outfit must, of course, vary with the acreage. It may be a barrel hand pump costing, perhaps, \$15, or it may consist of a gasoline engine power outfit costing \$300, more or less. Whatever the size, it should be of the best make obtainable. One of the greatest mistakes is in attempting to make one spray outfit cover the orchard when two or three would be necessary if thorough work was done. Every man owning a score of apple trees from which he expects to grow fruit for profit, cannot afford to be without a good barrel pump. If he possesses a ten-acre tract in bear-



IN THE ORCHARD OF L. B. SKINNER & SONS, ROSEBURG, OREGON  
This picture was published in the August issue of "Better Fruit" and was given credit to the Rogue River Valley, but should be Umpqua Valley, Oregon

ing, a power outfit will pay for itself. One good power outfit cannot be expected to cover more than twenty acres of apple trees of full bearing size, especially at the spray following bloom. Gasoline power sprayers cheapen the cost of spraying. Higher pressure can be maintained with them, more liquid can be sprayed in a day, and, therefore, the orchard is covered in less time. As a rule more thorough work is done with them on account of the higher pressure maintained, but it is a mistake to think that effective work cannot be done with a good barrel pump. Orchardists with small acreage cannot afford to possess an expensive power outfit, but by following the rules laid down for thorough spraying may secure excellent results. Communities of small orchard holdings often depend upon the public barrel or power sprayer, or own such machines in common.

By no means is the spray machine the only thing to consider. The accessories of spraying, such as nozzles, hoses, extension poles, spray agitators, elevated spray platforms, tanks, rotary pumps for filling, etc., are also quite essential in making up satisfactory spray equipments. Growers should make a very careful study of the different spraying outfits before purchasing. There are large numbers of different makes admirably suited to every kind of spraying. The manufacturers' catalogues should be consulted. This experiment station has recently issued for distribution Bulletin No. 20 upon "Spraying Machinery." A good spray machine should be found upon every orchard premises in this state. It should be as common as the plow or cultivator, and its use, for curculio and codling moth spraying, as well as for the control of other orchard insects and fungi, become a regular practice.

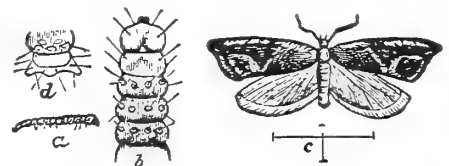
Spraying is the chief method of control of curculio and codling moth in apple orchards, but there are a number of other natural or artificial checks against both insects which deserve mention.

Banding of the trees to capture the descending worms of codling moth as they search for a place for pupation was a practice even before spraying for codling moth was begun. It has been shown that they will sometimes capture as high as 40% of the worms upon the tree, but it cannot be considered a practical operation when such far better results can be accomplished by spraying. When bands are used they must be looked after every ten days and the worms destroyed to prevent the moth from maturing and making its escape. If this is not done they will only offer safer hiding places, and do more harm than good. They are sometimes useful in trapping the first emerging worms in the summer in order to forecast the date of appearance of second generation worms.

Scraping of the rough bark from trees in the spring destroys many hibernating codling moth larvae, and the screening of the cellar windows and doors where wormy fruit or fruit packages are kept, for the capture and destruction of the emerging moths, is sometimes practiced. The destruction of fallen fruit for the purpose of ridding the orchard of cod-



CLARK SEEDLING STRAWBERRIES READY TO BE PUT INTO HULLOCK



STRAWBERRY LEAF ROLLER

a, Larva natural size; b, Head-end of larva, enlarged; c, Moth, about twice natural size; d, Tail-end of larva, enlarged. (After Saunders.)  
Colorado Experiment Station



ling moth is not a very effective measure from the fact that the majority of the worms leave the fruit before it falls to the ground. In Ohio it was shown by experiment that 72% of codling moth larvae leave the apples either before the apples have fallen or within twenty-four hours after. On the other hand, the destruction of windfall apples is to be highly recommended for destroying curculio larvae. Since apples containing curculio larvae invariably drop to the ground before the curculio is matured, the destruction of such windfalls, either by picking up the fruit by hand or pasturing with hogs, would destroy many of the insects.

Cultivation of orchards is one of the best of procedures for curculio destruction. It keeps the orchard free from many of the desirable hibernation places for the adults, and it unquestionably destroys a high per cent of the insects in the ground. Shallow cultivations in the months July and August will crush many larvae and pupae of this insect which are present in greatest numbers just beneath the surface of the earth at this time, as shown by the life history studies of curculio. It is possible that

ing the fruit in something the same manner as the codling moth, and found to be controlled by the sprayings recommended.

The apple curculio (*Anthonomus quadrigibbus* Say), the plum-gouger (*Anthonomus scutellaris* Lec.), and other curculios are known to be present in Missouri apple orchards and are, to a degree, repressed by these treatments.

The apple tent-caterpillar (*Malacosoma americana* Fab.) is often very abundant and destructive to the foliage early in the spring, and the addition of the arsenical to the dormant spray before bloom and the sprays following this usually results in cleaning them out.

The spring canker-worm (*Paleacrita vernata* Peck), which begins its feeding so early, is likewise reduced by the arsenical in the spring dormant spray and by those following.

Through the spring or summer, during the times of the sprays, come the apple leaf-crumpler (*Mineola indiginella* Zell.), the apple leaf-rollers (*Archips rosaceana* Har. and *A. argyrospila* Walk.), apple leaf-skeletonizer (*Canarsia hammondi* Riley), green fruit-worms (*Xylina* Sp.), white-marked tussock-moth (*Hemero-*



CLARK SEEDLING STRAWBERRIES  
IN BLOOM

fruit-feeding pests, against which these arsenate of lead sprays are effective.

Some of these insects make blemishes in fruit resembling so closely the blemishes caused by curculio or codling moth that they are scarcely distinguishable, and it is necessary to make almost continuous observations in the orchard during the summer when the injuries are being made in order to be able to identify them at harvest. This is especially true of injuries resembling the punctures of the plum curculio. Certain classes of punctures resulting in the deep pits or "dimples" in apples have previously been classified as the injuries from curculio, though experimentors had noted that they were unable to prevent such injuries by arsenical sprays. In the course of the studies of apple blemishes in 1908, the writer first discovered these "dimples" in apples to be the result, not of curculio punctures, but of pits made at egg-laying in very small apples by the tarnished plant-bug. This insect is one feeding by sucking plant juices, and is, therefore, not killed by arsenicals, and the observation is of interest since it explains the cause of the presence of a few of these unique injuries in orchards where the curculio is controlled. Some of the "dimpled" apples are shown in Figs. 15 to 18.



Photograph by C. C. Hutchins

CLARK SEEDLING STRAWBERRIES FROM WHITE SALMON VALLEY, WASHINGTON

a cultivation at this time, or other times, succeeds in destroying some of the codling moth larvae which are occasionally known to enter cracks and hiding places in the earth near the base of the trees.

The thinning of overloaded trees in the summer is often an opportunity for removing apples bearing these insects, and the destruction of such apples and worms at least may prevent their further damage and leave a higher per cent of perfect fruit upon the tree.

There are many useful natural insect parasites and other enemies of both curculio and codling moth which attack them in practically all their stages, and assist very materially in preventing the damage from them being far greater than it is.

In summarizing the valuable results accruing from the sprays which have been recommended upon apples against the curculio and codling moth, the fact must not be overlooked that secondary results are often secured in the destruction of other insects with these same sprays which often more than pay for the cost of the treatment.

The lesser apple worm (*Enarmonia prunivora* Walsh) has been found to be present in considerable numbers, attack-

ing the fruit in something the same manner as the codling moth, and found to be controlled by the sprayings recommended. The lesser apple leaf-folder (*Peronea minuta* Rob.), and many other leaf or



RASPBERRY FIELD OF A. F. STREBLOWS, SUMNER, WASHINGTON

# BREEDING AND DEVELOPMENT OF CANTALOUPE

BY P. K. BLINN, EXPERIMENT STATION, FORT COLLINS, COLORADO

**T**HE cantaloupe industry has made its principal development since the introduction of the Netted Gem variety, for due to its small uniform size and good carrying quality the growth of the industry has been possible.

It was not until the excellent quality of the cantaloupes produced on irrigated land, under dry climatic conditions, was realized that the industry became very prominent.

The first cantaloupes on the Eastern markets from the arid region were those shipped from Rocky Ford, Colorado, in 1896. Their superior flavor was an innovation to the Eastern melon trade; the contrast in quality was so striking as compared to the Eastern and Southern products that the Rocky Fords at once became regarded as a new variety, and under that popular symbol have won a national reputation. Each year thousands of cars of cantaloupes are marketed as genuine Rocky Fords, but from widely distant fields; those from the Southern states appearing on the markets early in May, and continuing the supply from various states until late in October.

The phenomenal growth of the industry, and the great demand, have established the cantaloupe as one of the favorite fruits of the American table. If the quality could always be assured there is hardly a fruit that could rival it in popularity or price.

Some of the causes that lead to poor quality are: Unfavorable climatic conditions, plant diseases, insect injuries, glutted markets and the unavoidable delays in transportation, many of which are beyond any apparent means of control. Yet when we consider what has been

accomplished by plant breeding in other lines it does not seem impossible that there could be developed a disease-resistant cantaloupe that would possess such superior qualities as to enable it to endure adverse conditions and still reach the markets in better state and with higher flavor than any we now possess. To this end cantaloupe breeding becomes an important feature of the industry, for at best the crop is a hazardous one, due to the above named influences, and until recently careful seed selection has been generally neglected.

The general growth of the industry has created a large demand for cantaloupe seed, and, naturally, Rocky Ford has been an important source of supply. It seems that it is more than the notoriety of the name that gives an intrinsic value to the seed produced at this point, for the cantaloupe growers of California and the Southern states look to Rocky Ford each year for their supply of seed. They unanimously concede that they can fully mature their melons a week to ten days earlier and be assured of more uniform results in regard to size and quality when they plant the Colorado grown seed than if they use the same strain after it has been grown native with them a year or so. It is a good instance of the change in plants that environments may sometimes produce, and how these variations may be transmitted to a degree when the plants are grown under other conditions. The effects of altitude and latitude have long been regarded as an influence that hastens maturity in plants when their seed are grown in lower, or Southern regions. It is also a notable fact that grains produced in the dry

climatic conditions of Colorado are much heavier per bushel and are superior in quality to that grown in humid sections, where the rainfall is excessive. It is evident that where the moisture is controlled and the soil and weather conditions will develop the fine flavor and qualities found in the Rocky Ford cantaloupe that same conditions will, in a measure, lend an influence to mature the seed with superior germinating power, vigor of growth and strong inherent tendencies over that produced in less favored localities. This would indicate that points in Colorado are destined to continue as superior cantaloupe seed growing centers, provided the growers will resort to the proper methods of seed breeding that will insure improvement of the cantaloupe in all its many possibilities.

Those familiar with the subject realize that a large amount of the seed that has been saved in the past was not choice selected seed, for much of it is saved from cantaloupes that were unmarketable for some reason, or it was saved late in the season, from immature melons, after frost has destroyed the vines. Improvement under such conditions would hardly be expected, and deterioration would be almost inevitable. However, there are growers who have been interested in producing choice cantaloupe seed, but even at best their system of selection has been too indefinite and incomplete to insure the best results. The plan of most growers in selecting seed for their own planting is to lay aside the choicest specimens from the piles as they are gathered for market. These may be further graded before they are finally saved for seed, which would seem that the system possessed some merit, yet it is quite analogous to the use of the fanning mill for developing improved grain, or the selection of seed corn from the crib to better the corn crop. The selection is incomplete, for the seed selected from an indiscriminate pile does not take into consideration the many inherent tendencies of the plant from which it was produced, no matter how perfect the specimens may chance to be. Another serious weakness is the lack of adherence to a definite outline of the qualities that should be embodied in a perfect cantaloupe.

The different ideals of selection have given rise to numerous strains of the Rocky Ford cantaloupes which are simply the Netted Gem variety, developed under different conceptions of type and quality. There may be the element of cross-fertilization in the origin of some of the strains, yet the foundation stock of all was originally the same strain, and the general characteristics of this variety has constituted the principal lines that have been considered in the selection of the Rocky Ford seed. For example, the uniformity of size and the netting are points that have been considered, and are well developed in several strains; yet equally essential are the inherent traits of the plant and the quality of the fruit. For example, early prolific production and

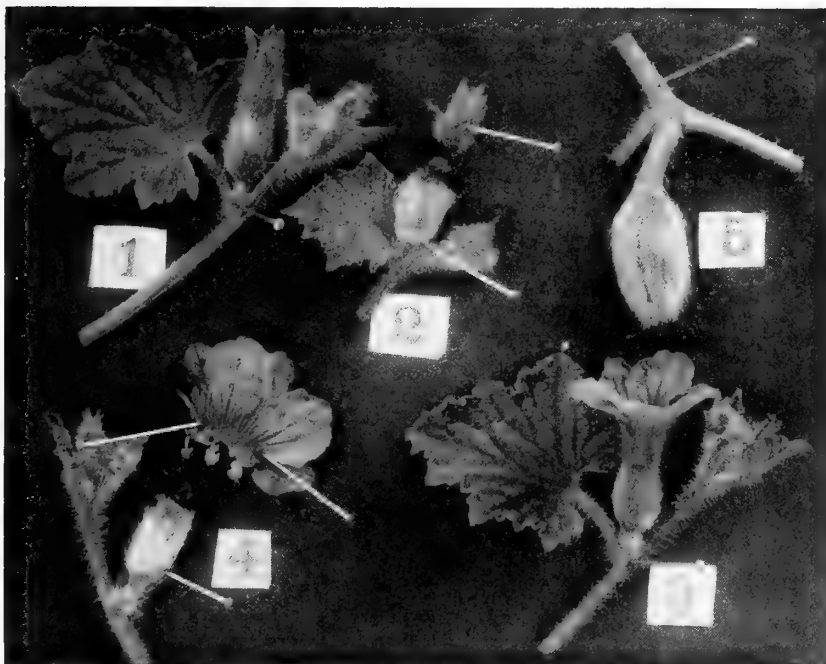


PLATE II—(1) BUD TWENTY-FOUR HOURS BEFORE OPENING. (2) BUD EMASCULATED. (3) BLOOM JUST OPENED. (4) CALYX AND CAROLLA REMOVED, SHOWING THREE ANTHERS ATTACHED. (5) SET DEVELOPING

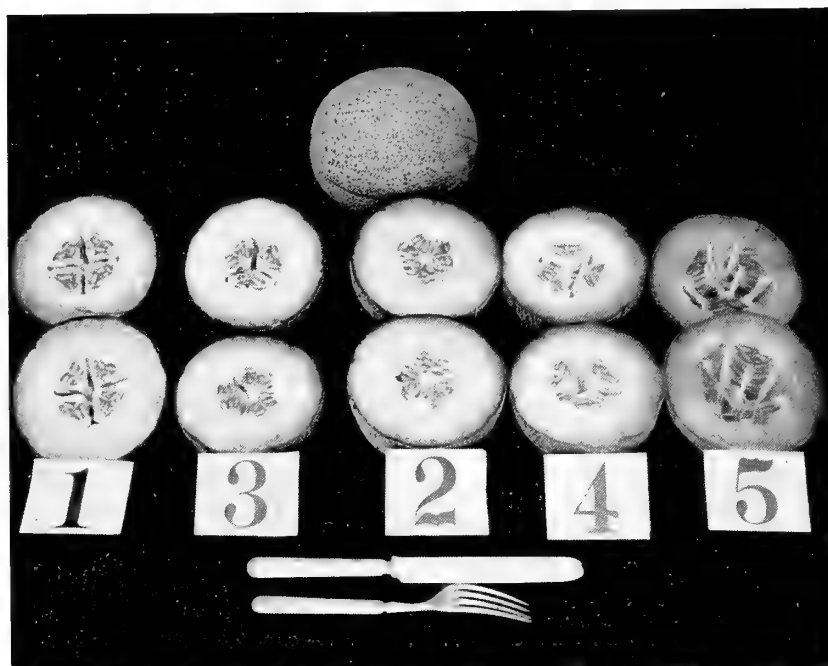


PLATE IV—CONTRASTS IN INTERNAL QUALITIES. NO. 2—PERFECT TYPE

disease resistance are of prime consideration, as well as a thick, fine flesh of rich flavor, with no disagreeable consistency or after tastes, which are all qualities that should be embodied in a perfect cantaloupe.

Doubtless the acme of perfection may never be realized, for some of the points may be antagonistic attributes, and the laws of plant breeding are not so well defined as to enable one to outline a scheme for seed selection that will insure the desired results in a given time.

The object of this article is with a view of outlining the methods and results of a definite investigation along this line, presenting the facts that have grown out of this work in such a way as to serve the future efforts in cantaloupe breeding.

The Colorado Experiment Station, in 1903, instituted an investigation for the purpose of developing, if possible, a cantaloupe that would be immune to the attacks of the fungus disease commonly known as "melon rust" or "blight," which is a serious menace to the melon industry. The first effort was a study of the cantaloupe fields to ascertain if any resistant tendency existed in the various strains of the Rocky Ford cantaloupes.

Owing to the different soil and the cultural conditions of the different farms, it was impossible to draw conclusions, as all fields were affected to some extent, and eventually all succumb to the disease.

It was evident that a comparative test under more uniform conditions would be necessary to determine the point in question. Accordingly the following season the principal strains of the Rocky Ford cantaloupes were tested in comparison on a piece of ground that had been seriously affected with the fungus. The plot was uniform in condition and had the same care in all respects, yet the results of the test revealed that one of the strains had marked disease resistant qual-

ities, for when the balance of the plot was practically dead and dried up with the disease the rows of this variety had a number of plants only slightly affected.

The seed of these resistant individuals was secured, and the following season, 1905, the same plot of ground was again used in order that the rust-resistant feature could be developed in as adverse conditions as possible. It chanced this season that one of the rows in the plot was planted with the seed of one cantaloupe, and the product of this row was so uniform in all of its qualities that it was evident that individual selection was an essential point to consider; also the increased per cent of the resistant plants gave evidence that the quality was transmitted and could be developed by seed selection.

The seed of the most resistant plants were again saved, but this time each one was kept separate; the next year, 1906, the same plot was again used. The test demonstrated that the product of some plants reproduced quite uniformly and in others there was a tendency to vary. This seemed to emphasize the importance of selecting individual melons as well as the plant, and isolating the breeding plots as far as possible to prevent undesirable crosses. One row in the plot was planted as a check row with the seed of a very choice melon, but which had not been selected for disease-resistant quality. This row was destroyed with the rust at least two weeks before the balance of the plot gave signs of the disease to any extent. (Plat I.)

As the disease began to develop in the plot a careful study was made and the most resistant plants were numbered by a stake, and as the melons ripened the most desirable were selected and the seed saved separately, with a descriptive record made of each. Near the close of the season the plot was gone over again

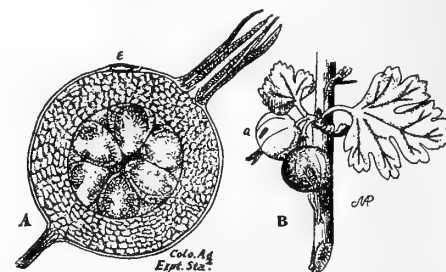
and noted as to which plants had been the most resistant during the summer. This revealed the fact that a few had been more enduring than all the rest. The seed of these could be easily identified, and those that scored the highest in points of quality were selected for the work in 1907. The seeds were planted in separate adjacent blocks of fifty hills each on the same old plot that for five consecutive years had been devoted to cantaloupes, which is enough to insure a failure, on account of the disease, with any of the ordinary strains of seed after it has grown on the same soil so long, but since the beginning of the resistant selection the plot has shown a decrease in the presence of the disease, while in adjacent fields the fungus has been as prevalent as ever, and even more destructive. Except for a few individual plants, the plot during the past season has been practically free from the disease.

Several tests of the rust-resistant strain were made by commercial growers in the vicinity of Rocky Ford, and all the reports have been of a flattering nature. Similar tests were also made in Illinois and Indiana through the co-operation of the experiment stations in those states, and the following copies of letters are the reports sent in.

From C. G. Woodbury, assistant horticulturist of the Agricultural Experiment Station, Purdue University, Lafayette, Indiana, under date of August 30, 1907:

"You remember that you forwarded me some seed early last spring of your new strain of the rust-resistant Rocky Ford melon. I placed this out in several localities in Southern Indiana, where the rust is usually prevalent, and am very pleased to report that your strain has proven to be nearly immune. In one place where there was a small patch directly across the road from a field which the rust ruined entirely the vines from your seed showed no effects of the disease whatever. To test the matter as severely as possible I had badly affected runners from the field that was dying of the rust cut off and scattered among the plants of the rust-resistant strain; even then they became affected only slightly.

"No doubt before this you have had a visit with Professor Orton of the department of agriculture, and he is able to corroborate my statements, since I had the pleasure of visiting some of the

CURRANT AND GOOSEBERRY  
FRUIT MAGGOT

a, Section through a gooseberry, showing egg and puncture at e; b, Two gooseberries on a stem, showing egg puncture or sting at a. Original. Drawings by Miss M. A. Palmer  
Colorado Experiment Station



FANCY PACKED STRAWBERRIES  
Labeled and ready to be shipped by Davidson  
Fruit Co., Hood River, Oregon

fields with him in Southern Indiana a short time ago."

From John W. Lloyd of the University of Illinois Agricultural Experiment Station, Urbana, Illinois, October 2, 1907:

"The melon seed you so kindly sent me last spring exceeded my highest expectations in reference to rust-resistance under Illinois conditions. I distributed the seed among a number of the commercial growers located at different points. Many growers lost, or failed, to plant the seed, or did not secure a stand, but with all who succeeded in growing a crop the results were the same. The vines remained green and vigorous after other melons were dead from the rust; the melons netted exceedingly well and were fine flavored. The only objection raised against the melon was its late maturity; in some cases the entire crop from other varieties had been marketed before any ripe specimens of the rust-resistant could be found. It is true that the maturity of the other varieties was hastened by the rust.

"I believe this melon will be exceptionally valuable for extending the season after other varieties are gone. However, in our experimental plat, where the other varieties were protected by spraying and the rust-resistant plants left unsprayed, there was not so much difference in the time of ripening, though the rust-resistant were somewhat later. Toward the end of the season the unsprayed rust-resistant vines were in better condition than the sprayed vines of the other variety.

"The small lot of exceptionally select seed which you sent was planted by itself at a distance from other melons, and the plants thinned to one in a hill. There was considerable difference in the rust-resistance of different plants, and I have saved seed from some of the most resistant with a view of planting each separately and making further selection next year."

The results of the investigation have demonstrated the possibility of controlling, to some extent at least, the injuries from the "rust" fungus by systematic seed selection and breeding.

The seed of eighty choice individual cantaloupes of the rust-resistant strain were planted on alfalfa sod in blocks of twenty-five hills each under as uniform conditions as possible. The object of this test was to determine the efficiency of the disease resistance on soil less affected with the fungus and to study

the problems of individual variation from individual selections, with a view of improving other characters in the Rocky Ford cantaloupe.

The test did not reveal any greater disease resistance by virtue of the alfalfa sod, but a marked contrast in the degree of resistance was revealed in the plats of different individual selections.

The variations of some of the plats made it easy to distinguish their outlines after the vines had run together and completely covered the ground in the field. The seed was all of the same variety and had been carefully selected for several years, and was considered a pure strain.

Had the seed been jumbled together and planted as usual the contrast and variations of the different selections would not have appeared to attract attention, but by planting each separately it was evident that it makes a vast difference in results which one was chosen for seed, even from a number of seemingly choice specimens.

The first contrast noted was the variation in the germination of the plats, which ranged from forty to one hundred per cent, and was clearly the result of vitality in the selections, the date of first setting fruit varied eight to ten days in different plats without apparent reason, and the time of ripening of some of the plats was prolonged to nearly three weeks, though this difference may have been partly due to the premature ripening of some of the plats most affected with the fungus, and as the most rust-resistant selections were usually the latest maturing plats, yet it was clear from the early setting and development of the plats before the disease was manifest that some of the plats were much earlier than others. There were also various combinations of the different qualities in the different plats. For

instance, the rust-resistant feature was associated with excellent melons with reference to netting, form and size in some plats, while in others the qualities were inferior in this respect.

When the pedigrees were traced a general uniformity prevailed in the plats whose seed had a common parentage a year or two previous, yet irregularities were constantly appearing in the products of some of the selections, and also the tendency to breed true seemed equally characteristic of others. In one instance the color of the flesh and the solidly filled seed cavity was uniformly reproduced for four succeeding years.

The variations of the individual selections seemed to come from no other reason than the inherent tendency of the individual, for the whole plat had the same care in every respect possible.

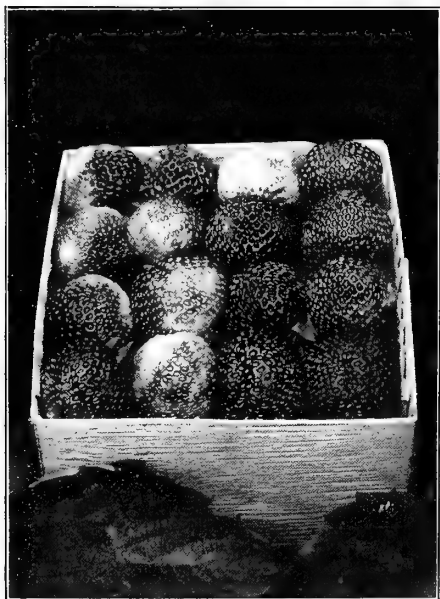
The recent application of Mendel's laws of heridity offers an explanation of the results observed in this experiment. The heterozygous unit factors of some of the selections produced the irregular variations, while the homozygous, or pure unit factors of others, resulted in characters breeding true.

So far in the investigation we have employed only seed selection to secure the desired results, but now the need of hybridization is manifest to combine the desired qualities found in different selections, for simple seed selection has been inadequate to this object. To combine the rust-resistance with earlier maturity is much desired, and to this end observations and tests have been made during the past season to ascertain the fact and methods necessary for artificial cross-fertilization of the cantaloupe flowers. As a result several cross-pollinations were made between some of the best selections of the rust-resistant strain and an abnormal early setting plant of another strain known as the "Watters."



PLATE III—EXTERNAL POINT OF NETTING AND SIZE





Photograph by C. S. Reeves

**BOX OF FOUR-TIER CLARK SEEDLING STRAWBERRIES**

Grown by T. J. League, White Salmon, Washington

According to Mendel's law of constant proportions resulting from such hybrids we may confidently expect the desired combination if qualities are compatible.

It was found by observations that the flower of the Rocky Ford cantaloupe is quite the exception to most of the cucurbitaceous plants like the cucumber and many other varieties of melons, which have their stamens and pistils borne in separate flowers, while the Rocky Ford variety is hermaphroditic—that is, the stamens and pistils are produced in one flower. It also has purely staminate flowers, produced in great profusion at the intersection of nearly every branch.

## Guarantee Certificate

### ROCKY MOUNTAIN CANTALOUPE BREEDING ASSOCIATION

ROCKY FORD, COLO.

Cantaloupe seed accompanied by this certificate, with the seal and package unbroken, is guaranteed to have been produced by this association in accordance with the by-laws, and the most approved methods of cantaloupe breeding. The purchaser is hereby assured of first grade selection, of a pure strain of genuine Rocky Ford variety known as:

..... Pedigree No. ....

This strain of seed has had.....years of individual test plat breeding. It was grown from registered stock seed, and was selected from a field grown exclusively for seed, where no melons were marketed. The requirements for this grade of seed were fine netting, standard size, good internal qualities, and with no defects that would injure the seed or the crop to be grown from them. The germinating vitality of this seed is perfect as experience and good equipment can produce.

In Testimony Whereof, The seal of the Association and the signatures of its officers are affixed..... 19.....

.....President

.....Secretary

It is evident that cross-fertilization is readily possible, yet the arrangement of the flower and the results of observation would indicate that self-pollenization is quite as common, or more so.

The numerical arrangement of the flower was found to vary, the three-lobed pistil, with three stamens, was the common form, but four, and even five, were encountered. The result of a three-lobed pistil is shown in No. 1 in Plate IV.

The pollen of the cantaloupe flower has been found to ripen about the time the flower is opened, and the pollen is usually shed at this time, which is usually early in the morning. To fertilize the flower and have the results of known origin it is necessary to find the bud about twenty-four hours before it opens (Plate II, No. 1), which can easily be told by observation. In this stage it should be emasculated before the pollen lobes are ripe. By cutting around the base of the corolla and calyx the two may be removed with the stamens attached, leaving the pistil free and exposed. (Plate II, Nos. 2 and 4.) A small paper sack is then tied over the stem to protect the pistil from foreign pollen until the following morning, when the stigma will be at about the same stage as if the flower had not been disturbed, and ready to receive the pollen.

The desired pollen is introduced from a freshly opened flower. By pulling off the corolla the stamens are exposed, showing ripe pollen grains, which are transferred by touching the ripe pollen lobes to the pistil or stigma until it is well covered with the yellow pollen grains. The paper sack is then replaced for several days until development begins.

The general conclusion of the investigation is that systematic seed breeding will intensify any desired qualities found in cantaloupes, as well as in corn and other crops.

The essential points for breeding cantaloupes are:



### RESULTS OF BLISTER MITE

1, Keeping records that will establish the history of a plant at any time; 2, Close observation to detect desirable variations; 3, Individual selections; 4, Comparative testing to determine relative merits; 5, Judging the average results of a selection rather than the behavior of an individual in it; 6, An understanding of physiological botany, in order to perform necessary cross-pollenization successfully.

The principal points, or unit characters, to consider might be enumerated as follows:

1, Germinating vitality; 2, Vigor of growth; 3, Early setting; 4, Quick maturity; 5, Prolific yields; 6, Uniformity of the desired quality in the product.

The standard for the Rocky Ford cantaloupe of today might be given to include the following qualities:

1, Proper size to pack in the standard crate; 2, Fine, heavy, light gray netting, covering the entire melon (Plate 3); 3, Color character of the background or interstices between the netting, such as will indicate to the eye, by a slight change of tint, when the cantaloupe is ready to pick, which is rather an olive green, and one that does not turn yellow fast; 4, A thick flesh and solid filled seed cavity (Plate 4, No. 2); 5, A firm, smooth texture, fine grained and free from any fiber or water core; 6, A green colored flesh is usually preferred, though commonly it is combined with orange or salmon tint; 7, The flavor is the ultimate test; it should be rich, sweet and spicy, free from any disagreeable consistency or aftertaste.

If the same care and attention were paid to the breeding and growing of improved cantaloupes and other crops there would be a great demand for pedigreed seed, as well as the call for registered horses, sheep or cattle.

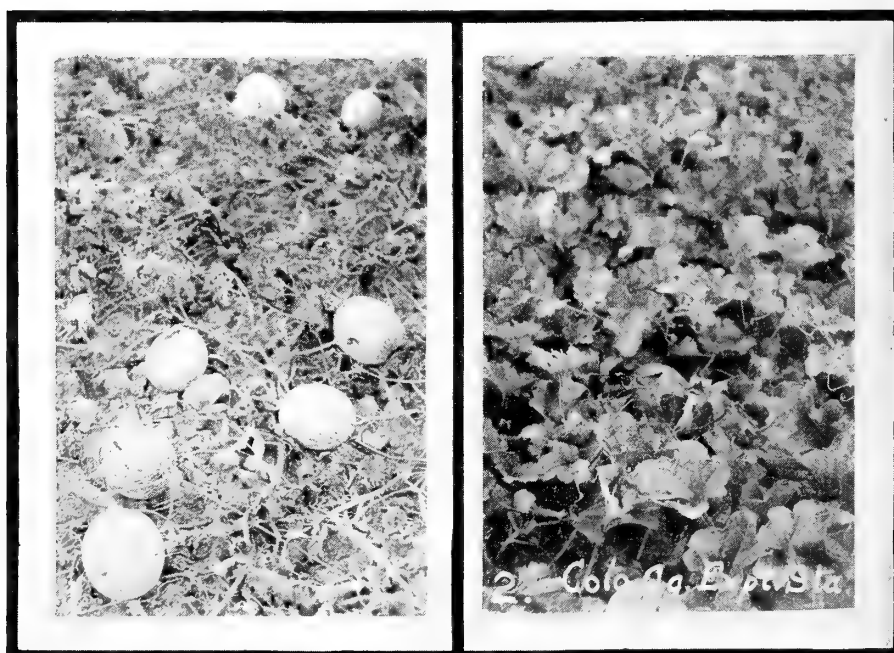


PLATE I—(1) VINE RUSTED ON CHECK ROW. (2) ADJACENT VINE SHOWING RESISTANCE TO RUST

# ORCHARDS INJURED BY THE TUSSOCK MOTH

SUMMARIZED BY F. M. HALL. FROM BULLETIN BY W. J. SCHOENE, NEW YORK EXPERIMENT STATION, GENEVA, NEW YORK

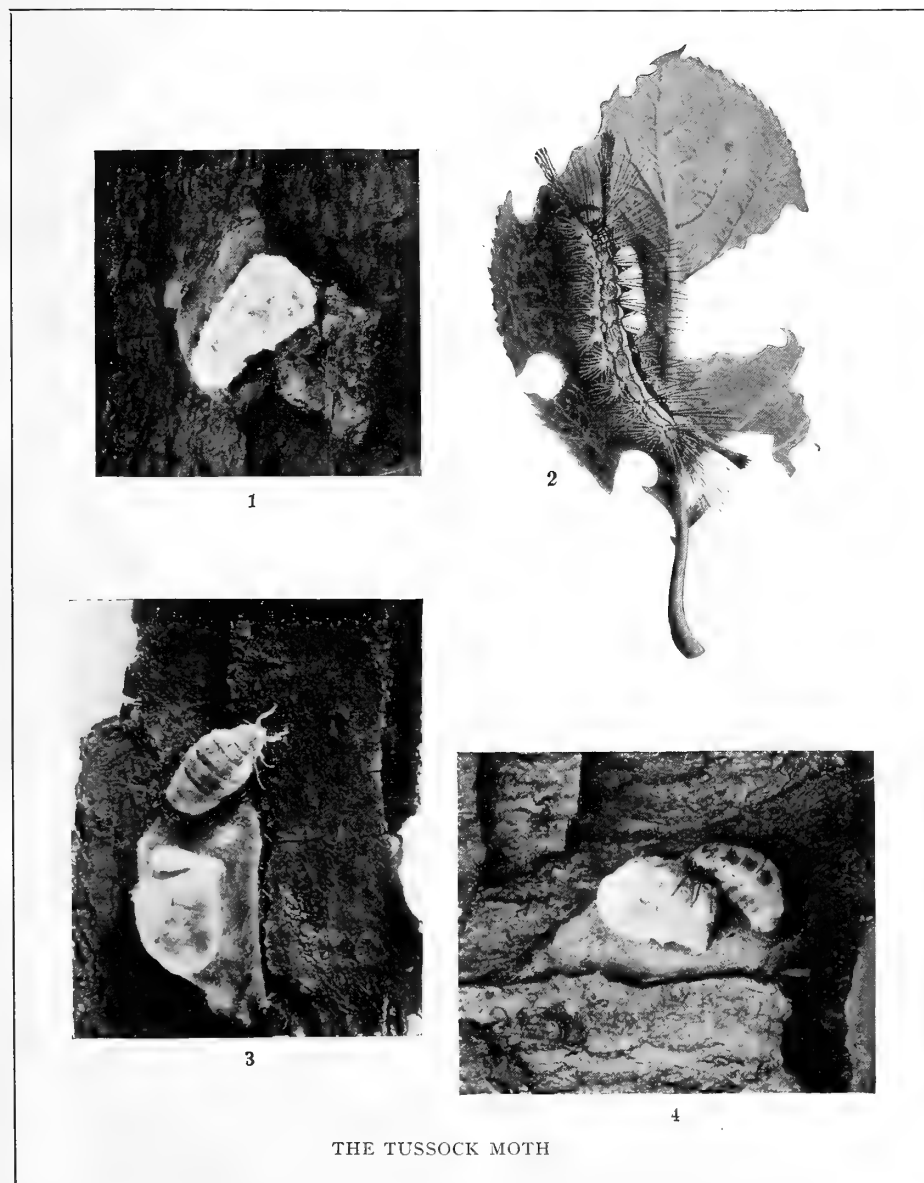
THE white-marked tussock moth has been, at intervals for nearly a century, a noteworthy enemy of fruit trees and shade trees. During recent years it has become increasingly prominent as a destroyer of foliage in city parks and streets, and has made it necessary for many cities and villages to adopt vigorous repressive measures. The attacks of the insect on fruit trees have attracted attention less frequently, though some of the caterpillars are found in many orchards every year. In 1895 quite a serious outbreak occurred in Ontario and Yates Counties in this state, but since that time the numbers of the caterpillars have remained about normal until 1908, when they increased alarmingly over quite an area in Western New York, particularly in the sections about Lockport, Ransomville and Middleport, in Niagara County. Considerable damage was done to the leaves, but more attention was attracted to the injury to fruit caused by the young caterpillars. The attack was usually upon the cheek of an apple or pear, the skin only being eaten

in some cases, though usually a cavity of considerable depth was made.

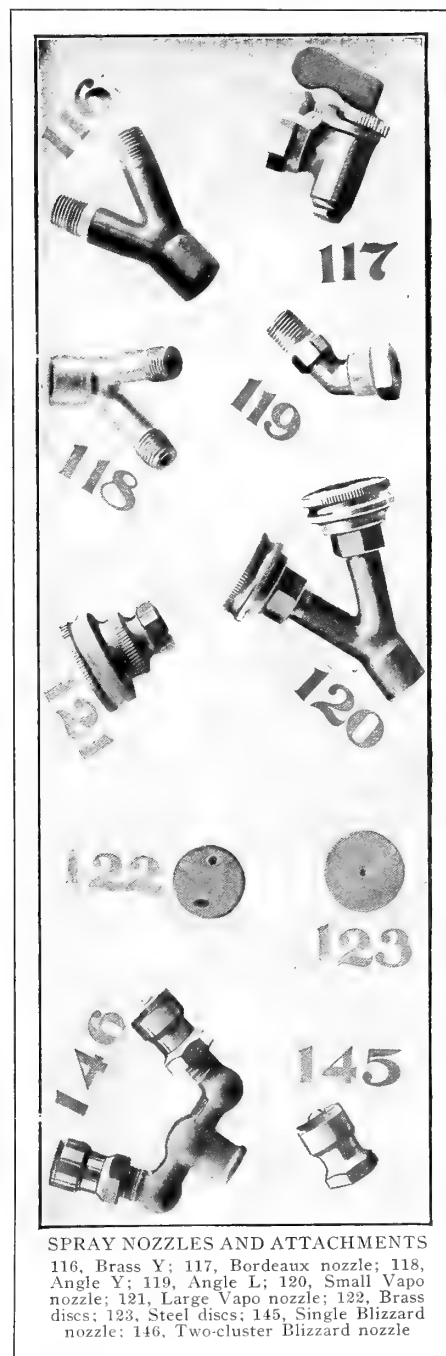
Attempts were made to control the caterpillars by spraying with poison in bordeaux mixture, but damage appeared to increase for as much as a week after the application of poison had been made. Injury was also quite common in the orchards that had previously been given sprayings for codling moth. These facts led many orchardists to believe the tussock-moth caterpillars immune to poison. However, the failure to kill them is not due to any peculiar resistance to poison, but to the fact that the insects feed, after the first, within the apple and on the lower sides of leaves in the interior of the trees, where only most thorough spraying will reach them. As long as the caterpillars continued to feed in the protected spots they escaped death, but as they changed feeding grounds with their increasing size they took the poison, and gradually died off.

The extent of the injury varied greatly with the individual trees, ranging from wounds on possibly five per cent of the

fruits to partial or almost complete destruction of eighty-five per cent. This variation is quite readily explained by the wingless condition of the female moth and the consequent limitation of broods in successive years to rather narrow limits.



THE TUSSOCK MOTH



SPRAY NOZZLES AND ATTACHMENTS

116, Brass Y; 117, Bordeaux nozzle; 118, Angle Y; 119, Angle L; 120, Small Vapo nozzle; 121, Large Vapo nozzle; 122, Brass discs; 123, Steel discs; 145, Single Blizzard nozzle; 146, Two-cluster Blizzard nozzle

The caterpillars, especially in the last two or three of their four or five molts, are strikingly marked, and, if we could forget their association with crop destruction, even beautiful caterpillars. The heads and two small tubercles on the back are bright red, a long horn-like pencil of black hairs projects forward from each side of the head, and a similar pencil back and upward from the rear of the body, four very prominent brush-like tufts of thickly crowded white hairs are

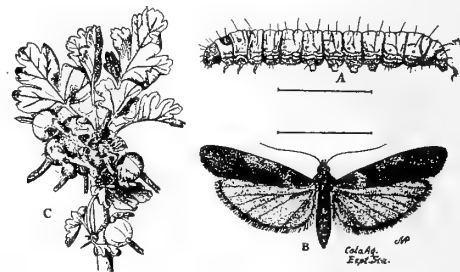
borne upon the back, in line, behind the head, while the remainder of the back is decorated with a broad, velvety deep black stripe.

These caterpillars are hatched in late May from eggs laid during the preceding summer in conspicuous masses on the cocoons from which the mature females have emerged. From one hundred to five hundred eggs make up each mass, held together by a white foam-like substance, which makes the mass quite conspicuous. Collection and destruction of these masses is one of the most effective methods of checking the increase of the insect.

The caterpillars are very small and inconspicuous at first and feed in protected places, on the undersides of the leaves and on interior leaves, as already mentioned, so they may long escape attention, though present in considerable numbers. Females molt four times and the males five, and in from twenty-five to thirty, or more, days spin very thin cocoons, from which the perfect insects emerge in ten to fifteen days.

The male moth is rather attractive, with prominent feather-like antennae, or "feelers," large legs and large, broad wings, brown in color, with delicate gray markings. The female is a wingless, whitish-gray grub-like insect, with a sack-like abdomen. The legs and antennae are slender, quite unlike those of the male. Natural enemies usually keep the tussock moth in check. Many kinds of birds feed upon both caterpillars and mature females, and have usually held the insect to normal numbers except in cities, where destruction of birds and unfavorable conditions for them have left the insects to increase unhindered except by parasite foes. Fortunately there are several of these, the most effective being two species of wasp-like flies. Flies of other species are found less frequently. The vast debt fruit growers owe to such parasitic friends is shown by the fact that in some localities where the caterpillars have done much damage ninety-five per cent of the cocoons examined were found to contain eggs of some other insect which would ultimately destroy the host.

If the cocoons are collected, which is one repressive measure, they should not be destroyed, which would also kill the helpful parasites, but should be placed in a box or barrel covered with wire netting, through which the moths cannot escape but the parasites can.



CURRENT AND GOOSEBERRY FRUIT WORM  
a, Worm; b, Moth; c, Gooseberries webbed together.  
Original. Drawing by Miss M. A. Palmer  
Colorado Experiment Station

The tussock moth spreads largely by migration of the caterpillars, so that banding unaffected trees is an admirable preventive measure. Sticky fly paper may be used for this purpose, or a band of raw cotton tightly fastened about the tree by a string at the middle of the band, leaving the cotton loose both above and below the string. The loose fibers thus entangle and stop the larvae. Banding may also be used even where trees have been attacked, for the caterpillars drop to the end of a thread when the tree or branch is smartly jarred. They can then be caught in a curculio catcher or on sheets and destroyed, and the bands will prevent the coming of a new supply.

The egg masses are very conspicuous, as they are usually placed on the old cocoons, and form white clusters an inch to an inch and a half long. They are usually found on the trunks and larger branches of the trees, and can be easily scraped off with a hoe or similar sharp tool. They should be burned. The smaller branches should also be examined, and especially any peculiar looking bunches of dry leaves, for the cocoon is frequently attached to several leaves. This work may be done any time in winter or spring, before the first of May. In the southern part of the state, particularly on Long Island, a summer collection of egg masses should also be made, as the insect here has two broods a year.

But the main reliance, in orchards, should be placed on spraying with bordeaux and poison. This is a treatment which should be made anyway for scab and codling moth, and to control the tussock moth requires only more thorough work, giving attention to the undersides of the leaves, the growing fruits and to foliage in the interior of the trees, particularly on water sprouts. In cities, on shade trees, natural enemies, banding and collecting cocoons and egg masses must be depended on by the private individual, though it may often be necessary to employ sprays. To do this effectually requires powerful machinery and experienced help, which the city may best provide.



LARVA OF TUSSOCK MOTH AND ITS WORK

# THE CULTURE OF SMALL FRUITS ON PACIFIC SLOPE

BY GEORGE ROEDING, FRESNO, CALIFORNIA

**T**HIS term usually applies to the berry family—blackberries, raspberries, gooseberries, strawberries, currants, etc. The whole Pacific Slope, wherever fruit soils and sufficient moisture prevail, is adapted to their successful culture. In California there is almost a continuous growth, and intermittent cropping can be carried on almost during the entire year. Every family orchard should have a plot devoted to small fruits, and where the conditions are favorable and near to markets they can be made immensely profitable when grown along commercial lines.

The preparation of the soil should be thorough. The roots being close to the top of the ground and of a small, rather fibrous nature, the importance of having the soil in the very best possible condition to insure a good stand of plants and a satisfactory growth must be apparent to anyone engaging in the culture of berry plants. Thorough dressing with

well rotted stable manure will do much to promote a vigorous growth the first season, and, having secured this, profitable crops may be expected the second year after planting.

Berry culture cannot be successfully carried on in California without irrigation, so that before planting the land should be graded, having the grade as uniform as possible so as to prevent flooding. A berry grower should be absolutely certain of water when it is required, and if there is any question about the supply from ditches a pumping plant should be installed to have water available whenever it is needed. A delay of even a few days may mean the loss of the entire crop.

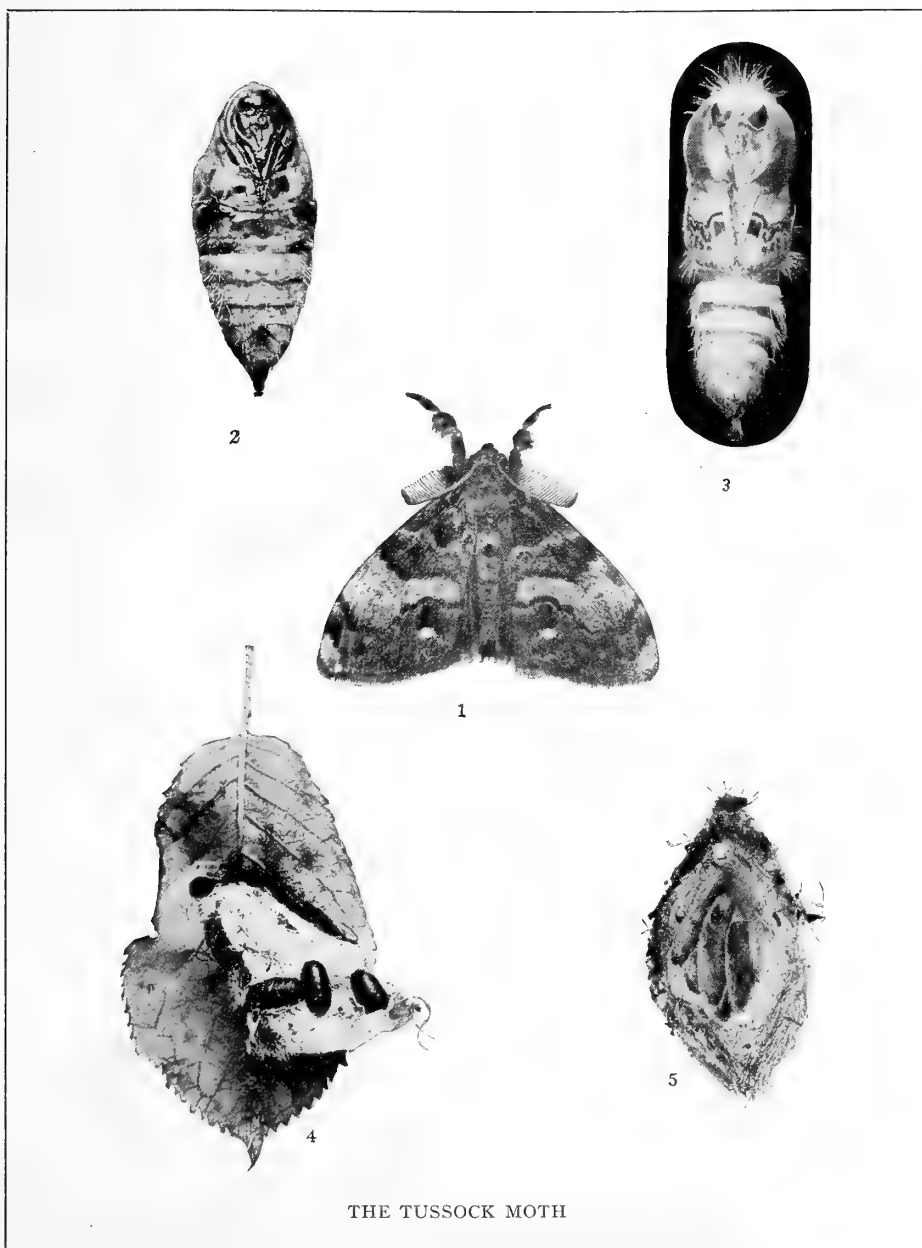
As the Logan and Mammoth blackberries are practically in a class by themselves, and the cultural directions for one applying to the other, we will consider them under the same head. They should be planted in rows six feet apart and

eight feet between the rows. The best results are obtained by trellising the runners to wires on heavy posts, which will hold the wires taut. As soon as the fruiting season is past the fruiting canes should be cut away and the new canes be bunched together and wound around the wires. At least two wires should be strung on the posts so that as soon as one wire is covered the remaining canes may be wound around the other. By following this method from year to year a heavy crop of large, fine berries may be looked for annually.

A novel method of handling them is to plant in squares 8x8 feet. Drive three stakes one and one-half feet into the ground, using 2x2 six-foot posts. Nail an old barrel hoop on the top of the posts and another two feet from the top. The shoots are trained over these hoops. It is simply astonishing the amount of fruit which will be obtained by this method of handling. Another satisfactory plan is to set 4x6 seven-foot posts twenty feet apart and nail 2x2 eighteen-inch cross ties to each post. Set the posts three feet in the ground and string No. 12 galvanized wire on the cross ties, holding it in place with staples. The new shoots should be trained across, winding them around the wires from one wire to the other.

Loganberry originated with Judge J. H. Logan of Santa Cruz, California, from whom it derives its name. This berry is unlike any other in existence, being a hybrid between the raspberry and the blackberry. The fruit is sometimes an inch and one-quarter long, dark red, as large as the largest blackberry, and produced in immense clusters. It partakes of the flavor of both the blackberry and raspberry, a mild, pleasant, vinous flavor, delicious and peculiar to this berry alone; seeds small, soft and few; fruit ripens early, just after strawberries and before blackberries or raspberries. The vine, or cane, of the Loganberry grows entirely unlike either the blackberry or the raspberry; it trails or grows upon the ground, more like a dewberry. The canes are very large, without thorns, but have very fine, soft spines; leaves more like those of the raspberry than blackberry. It is excellent for the table, eaten raw or stewed, and makes a fine jelly or jam. Ripe in May.

Mammoth blackberry, supposed to be a cross between the wild blackberry of California and the Crandall Early. It grows entirely unlike any other blackberry plant known. It is a rampant grower, trailing on the ground, and under favorable conditions will grow twenty feet in a season; the canes are large, of deep red color when exposed to the sun; the foliage is large and thick and of a deep green color; enormously productive and exceedingly early, ripening three weeks before other cultivated kinds; fruit enormous, specimens measuring two and one-half inches long; seeds small, soft and abundant; core small and soft; in size



THE TUSSOCK MOTH



and flavor said to surpass all other varieties of blackberries. Ripe in June.

Himalaya was imported originally from the Himalaya Mountains by Luther Burbank and brought to its present state of perfection through his efforts. It is a remarkable grower, it being not unusual for the canes to grow forty feet in a single season. It should be trained on a trellis. The pruning should be carried on in the winter months and the old canes cut to spurs something after the manner followed in pruning caned grape vines. It is an enormous bearer and a good shipper; berry more round and broader than Kittatinny, and much juicier; very few seeds, which are quite small, and with almost no core. For canning and jams it has few equals and is also an excellent table fruit. Season is from June 15 until late fall.

The Phenomenal is one of Luther Burbank's greatest berry triumphs. It is the result of a cross between the Improved California dewberry and Cuthbert raspberry. The berries grow in clusters of from five to ten, and are somewhat larger than the loganberry, to which it has a close resemblance. It is far more productive than that variety. The canes are much stronger and more vigorous; fruit has a smaller core, and the same quantity of berries will make twice the amount of

jelly. It is easily grown, is very firm and is not only one of the most profitable berries for the fruit grower, but a few plants in the back yard of a town or city residence will also be the delight of the housewife. The method of training and pruning is the same as for the loganberry.

The most satisfactory way of handling blackberries is to plant four feet apart in rows, with eight feet between the rows. The first season all the shoots which have attained a height of two feet should be shortened in to twenty inches. This will cause them to send out many lateral shoots, so that instead of having the fruiting shoots confined to a few canes, there will be a number of lateral shoots from each of the main canes for producing fruit clusters. These laterals should have one-half of their growth cut off in the winter months. In the second year, as soon as the season's crop has been harvested, cut away the fruiting wood, so that all the energy of the plant will be forced into the new growth. The young shoots should again be cut back to the proper height to develop laterals, and these, as has already been directed, should be cut back in the winter months. This method of pruning has other advantages by making the canes sturdy and self-supporting, and causes the fruit to be distributed over the entire plant instead

of being confined to the terminal growth. By having the rows eight feet apart, cultivation can be carried on with a horse, a very important point. A good supply of water, thorough cultivation and liberal applications of rotted barnyard manure are important features in the culture of the blackberry.

Crandall's Early—Everbearing, large and firm; very early; bears during the entire season.

Erie—Very productive of berries of the largest size; coal black, firm and solid; sell in the market at the highest prices; fine form; ripens early.

Evergreen—Introduced from Oregon; beautiful, lacinated foliage, which it retains all winter; berries large, black, sweet, rich and delicious; ripens from July to November; fine berry for family use.

Kittatinny—Large, roundish, conical, glossy black; juicy, sweet, excellent when fully ripe; the most popular variety in California.

Lawton—Fruit large; ripens late; very productive.

Wilson's Junior—A seedling of Wilson's Early; said to be hardier and more productive than its parent.

The improved varieties of dewberry or trailing blackberry are very popular. They are enormous croppers, produce fruit of the very best quality, which ripens fully two weeks earlier than any of the blackberries. Plants should be set four feet apart, with rows six feet apart. When there is not sufficient rainfall to keep the vines in active growing condition, irrigation should be practiced. Immediately following the harvesting all the old canes should be cut off and the following spring the new ones should be trained to a wire two feet from the ground. The method of trellising is the same as for the other varieties of trailing vines, except that the canes are closer to the ground.

Gardena—Has become very popular in recent years; berries large, glossy black, sweet, rich and delicious. Vines are very heavy bearers and when once established produce an abundance of fruit annually. Fruit ripens second week in May.

Lucretia—Very productive; the berries are large and of unequalled excellence, soft, sweet and luscious throughout, of bright, glossy black color. Ripens ten days later than the preceding.

The raspberry does not grow as rank as the blackberry, so may be planted four feet apart, but not less than six feet between the rows. Directions for pruning are the same as have already been given for the blackberry. Do not allow more than five canes to grow from one root. Liberal applications of rotted barnyard manure, thorough cultivation and irrigation judiciously practiced is sure to develop fruit of the very best quality and a liberal supply of it.

Cuthbert—Berries very large, deep rich crimson; fine; good for shipping; the most popular of all raspberries; stands the sun and heat well.

Golden Queen—A seedling of the Cuthbert. A beautiful, large, golden yellow berry, larger than its parent and surpassing it in beauty and quality. The desire for a yellow raspberry of high quality, combined with vigorous growth, is believed to have been fully met with in this variety. Should have a place in every garden.

Gregg—Of good size and fine quality; very productive and hardy. Occupies the same position among black caps as Cuthbert among the red sorts.

Hansell—Medium to large; bright crimson; canes vigorous and productive; very early.

Marlboro—The largest early red raspberry, ripening a few days after Hansell; beautiful bright scarlet; good but not high quality.

Mammoth Cluster—A large and very productive variety of the blackcap; quality very good.

Souhegan—A valuable market variety. Its earliness and large size make it one of the most valuable of the black raspberries; firm and sweet.

Superlative—A new raspberry of English origin. Fruit red, large, conical, of excellent flavor and a great improvement over all other varieties of raspberries. It is a continual bearer, producing fruit all summer, the fruit appearing on the young shoots which start from the plant. It is most useful as a dessert fruit and is readily plucked on account of its long stems. It is a great market variety and the experience with it on this Coast has exceeded the claims made by the introducers. It is worthy of general cultivation.



FIGURE 3—LEAF OF SNYDER BLACKBERRY, SHOWING LARGE NUMBER OF SMALL SPOTS CAUSED BY ANTHRACNOSE FUNGUS

Read article by W. H. Lawrence, page 73 of this issue

Currants are usually planted in rows four to five feet apart, the plants standing two to three feet apart in the rows. They will not thrive in the hot interior valleys of California, being subject to sunburn. It is only practical to grow them in the coast counties, and they attain perfection when they get the benefit of the cool, moist air from the ocean. Prune in winter, thinning out the new shoots when they are too thick, and remove the old, unfruitful wood. Thorough cultivation, but not deep, is at all times advisable.

**Black Naples**—Very large and black; valuable for jams and jellies.

**Cherry**—Very large, deep red; fine for preserving; valuable market variety.

**Crandall's Black**—A native black seedling of the wild currant and the only variety which will grow in the hot interior valleys of California. It is a vigorous grower and a heavy producer. Berries large to very large, one-half to three-quarters of an inch in diameter. A fine fruit and worthy of general cultivation.

**Fay's Prolific**—A new currant, which has well sustained the claims of its disseminator. It is larger than the Cherry, has less acid and is much more prolific.

**La Versailles**—A French variety of very large size, resembling the Cherry; of great beauty and very productive.

**White Grape**—Large, yellowish white; valuable for the table; the finest of the white sorts; very productive.

The gooseberry is just as averse to growing in hot, dry climates as the currant, and it therefore finds conditions favorable for its perfect development in localities where the climate is cool and foggy. All attempts to grow it in the interior simply result in failure. In the mountains, however, at an elevation of 5,000 feet, the gooseberry thrives and produces an abundance of fruit. Gooseberries should be planted and pruned in practically the same manner as currants.

**Downing**—Fruit good size, roundish oval, whitish green; skin smooth; flesh soft and very good.

**Oregon Champion**—Berries very large, brownish red color, very sweet and fine for table use and pies; bush strong, not very thorny; a very prolific bearer.

**Smith's Improved**—A seedling from Houghton; fruit quite large, and a stronger grower than the parent; light green, flavor sweet and excellent; very productive.

**Berkeley**—Immensely prolific; large and handsome; ripens very early; commands a high price.

**Industry**—Regarded as the best English gooseberry yet introduced; the fruit is of the largest size, dark red and hairy, rich and agreeable.

**Victoria**—A new variety introduced from England, somewhat resembling Crown Bob, but with larger berries; very strong grower, a late bloomer and sure cropper. Stands well in the lead as one of the best English gooseberries. It is of excellent flavor and is well suited for market purposes.

The strawberry adapts itself to a wide range of soils and climates, and in this respect it differs from the other members of the berry family. Strawberries bear almost the entire year in several of the coast counties, and the same may be said of the plants in the interior valleys where they are properly mulched and irrigated. In laying off ground for strawberries the

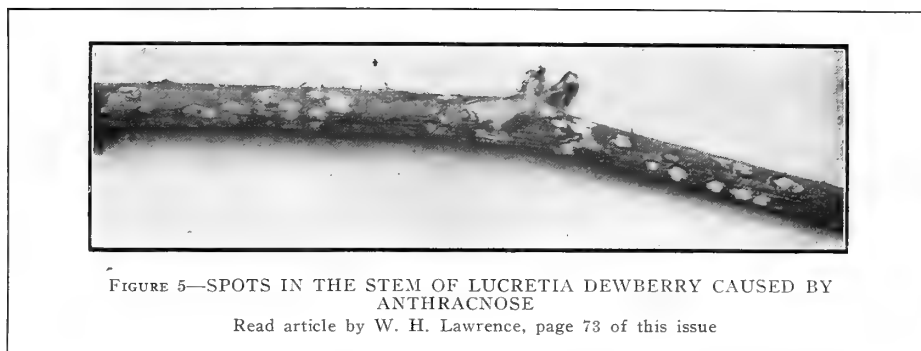


FIGURE 5—SPOTS IN THE STEM OF LUCRETIA DEWBERRY CAUSED BY ANTHRACNOSE

Read article by W. H. Lawrence, page 73 of this issue

first essential point is to grade the plot so it has a gradual fall, so that no part of the rows will become submerged in irrigating. There are a number of methods for laying out strawberry beds, but the one mostly followed by commercial growers is to plant in rows hilled up and about two feet apart, with a ditch between for irrigating. Set the plants eighteen inches apart in the rows. The best time to set the plants is late in the fall after a heavy rain or any time in the early spring months. It is important during the fruiting season to keep the plants in an active state of growth by irrigating, weeding and cultivating. In order to obtain large, highly flavored fruit, pinch

off the runners as fast as they appear, and this will cause the plants to stock out, as it were, on which the very finest strawberries may be expected the following season.

**Brandywine**—Large, roundish, conical, of fine quality; flesh firm; valuable medium to late variety.

**Jessie**—Large, handsome, roundish, conical, dark red, firm and of good quality; plant vigorous and productive.

**Longworth's Prolific**—One of the best known varieties in California; an old favorite, always commanding a high price. Better adapted to the coast counties than to the interior valleys.

**Marshall**—One of the best all-purpose berries; very large, roundish, dark rich crimson; quality good, firm; a good market sort. The most popular and profitable variety in this section.

**Sharpless**—This old and well known sort is still very popular; fruit large, bright scarlet; flesh light red, moderately firm, sweet, rich and of good flavor; profitable for market and also for home use.

## MARKETING OF FRUIT—THE LIVE ISSUE

KARL J. STACKLAND  
Grower and Shipper  
Blue Mountain Fruit

Cove, Oregon, February 28, 1911.

Northwestern Fruit Exchange,  
Portland, Oregon.

Gentlemen: It is with pleasure that I herewith extend to you my thanks for the work done for me in selling nine cars of apples at prices that no other agency could have obtained this season without a better equipment in every way than they have commanded up to date. For a first season demonstration of your system and ability to market fruit to the best advantage, your work leaves nothing of importance to desire or to criticize by anyone who knows and realizes all the difficulties of this business.

Looking over the eighteen years that I have been a shipper of fruit from this section, your concern looms up as the greatest boon to the fruit industry of the Northwest Pacific Slope of anything yet established. No growers' union or fruit exchange can ever hope to market fruit to as good an advantage as yourselves, unless headed by some successful shipper in the business. I am, there-

fore, strongly of the opinion that the best thing the growers of this region can do is to line up and let you handle the whole output, through local unions or otherwise.

Co-operation is all right if those so organized are willing to pay for the very best business talent obtainable for that purpose, otherwise of little or no benefit; while organization for uniform grading and co-operation, under a real marketing concern like yours, wherein the members are all mutually interested with the rest of the patrons as growers and investors in this industry, is the only thing that promises a sure and early success in this line.

I expect to let you handle all I have to ship in the line of apples, etc., next year, or rather for the next season.

Very truly yours,

Karl J. Stackland.

Mr. Stackland is known throughout the Northwest as a fruit grower and shipper of wide experience, not only in the problems of production, but also of marketing. The letter is reproduced with his permission. \*

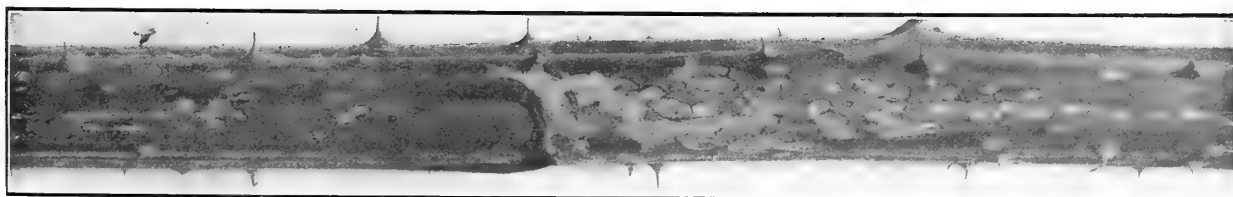


FIGURE 2—SPOTS ON THE STEM OF THE LAWTON BLACKBERRY, CAUSED BY THE ANTHRACNOSE FUNGUS

Read article by W. H. Lawrence, page 73 of this issue

# THE COMPOUNDING OF SPRAYS AND THEIR USES

BY A. B. CORDLEY, OREGON AGRICULTURAL COLLEGE, CORVALLIS, OREGON

**T**HIS article is open to the criticism that so many formulas may be confusing to the orchardist who is just beginning to spray. I believe, however, that no formula has been included which is not of value for some special purpose, although many of them are used but little, if at all, in orchard practice. Orchardists who understand the range of usefulness of the lime-sulphur spray, arsenate of lead and Black Leaf, who are equipped with a good spray pump and have the determination to do thorough work are as well fortified as may be against most orchard pests.

None of the crops of orchard, garden or field; none of our domestic animals; practically none of our food products, household effects or wearing apparel but are subject to the ravages of insects or fungi, or both. Even man himself is subject to great personal annoyance, and even disease, by these ever-present agencies.

To understand the general principle which underlies the selection of the proper remedy to be used for any particular insect one has only to know that practically all insects may be divided into two great groups:

Group one includes all insects that have biting mouth parts—mandibulate insects—and which actually chew and swallow the tissues of the plant or other substance upon which they feed. Grasshoppers, caterpillars, flea-beetles, striped cucumber-beetles, codling moth larvae, etc., are good examples of this group.

Group two includes all insects with beak-like sucking mouth parts—haustellate insects—which pierce the plant or animal upon which they feed and suck up its juices or blood, but neither chew nor swallow any of the structural tissues. The apple tingis, woolly-aphis, hop louse, green apple-aphis, black cherry-aphis,

San Jose Scale, etc., are good examples of this group.

In general, insects which belong to group one may be poisoned by sprinkling or dusting the surface of the plant upon which they feed with some poisonous substance, but insects which belong to group two cannot be so poisoned, since they secure their food from beneath the surface, and cannot be made to eat poison. They must be destroyed by gases, washes or other substances which act externally upon their bodies.

All insecticide substances may, therefore, be arranged into two general groups:

Group one includes principally the various arsenicals, such as paris green, London purple, Scheele's green, arsenate of soda, arsenate of lead, etc. These poisons are all valuable against insects which belong to group one, and feed upon the surface of plants, but are practically valueless against those of group two.

Group two includes a great variety of substances which act externally upon the bodies of insects, either as mechanical irritants or caustics, or to smother them by closing their breathing pores, or to fill the air about them with poisonous gases, or simply as repellants. Soap, sulphur, tobacco, insect powder, kerosene emulsion, crude petroleum, the lime-sulphur wash, resin washes, hydrocyanic acid gas and carbon bisulphide are some of the most valuable insecticides of this group. These are used successfully not only against sucking insects but many of them are also used against biting insects when for any reason it is undesirable to use poisons, or when it is impossible to apply poisons directly to the food supply, as in the case of insects which work beneath the surface of the soil, or as borers or miners in wood, leaf

or fruit, or in stored products, or as animal parasites or household pests.

Likewise it should be understood that a fungus is a plant as truly as is the apple tree, the prune tree, the wheat plant or any other plant upon which it may be growing. It differs from the common plants essentially in being much more simple in structure and in being devoid of chlorophyll—the green coloring matter of plants. Its seeds, which are called spores, are more simple and very much smaller than the smallest seeds of our common plants, and are produced in almost inconceivably great numbers. The vegetative portion of the fungus, the part which, in a sense, corresponds to the roots, stems and leaves of ordinary plants, the part which absorbs the food materials and eventually produces the spores, consists of a mass of more or less branched, white or colorless, and very minute threads, and is called the mycelium.

Being so small and light, the spores are readily carried long distances by the wind, are washed about by the rains, and are also carried by birds and insects, and probably by other agencies. These agencies are thus largely responsible for the spread of fungus diseases from leaf to leaf, plant to plant or orchard to orchard. Over greater distances the spores may be carried on shipments of infested nursery stock, fresh fruits, vegetables, seeds, etc.

Should a spore fall upon suitable soil, such as the surface of leaf or fruit and the conditions of heat and moisture be favorable, it will germinate—push out a delicate, slender germ-tube. In the case of most parasitic fungi this germ-tube soon penetrates the epidermis of the leaf or fruit and the mycelium develops in the underlying tissues entirely beyond the reach of fungicides. In some cases, however, the mycelium spreads over the surface of the plant. In other words, fungi, like insects, may be divided into two groups, as follows:

Group one, internal fungi, includes those fungi in which the germ-tube penetrates the skin of leaf, fruit, branch or root, and the mycelium develops entirely within the tissues of the host plant. Apple-tree anthracnose, brown-rot, the grain-smuts and rusts, the downy-mildews, for all practical purposes apple-scab, and many others may be included in this group. The philosophy of spraying for this group of fungus diseases is based upon the fact that they cannot be cured, but can be prevented. This germ-tube must be destroyed before it penetrates the epidermis, and to do this the surface of the host must be thoroughly protected by the fungicide during the entire time the spores are germinating.

Group two, external fungi, includes those fungi in which the mycelium spreads over the surface of the host. This group includes but comparatively few serious pests. Perhaps the one that has attracted most attention in this state is the powdery-mildew of gooseberries.

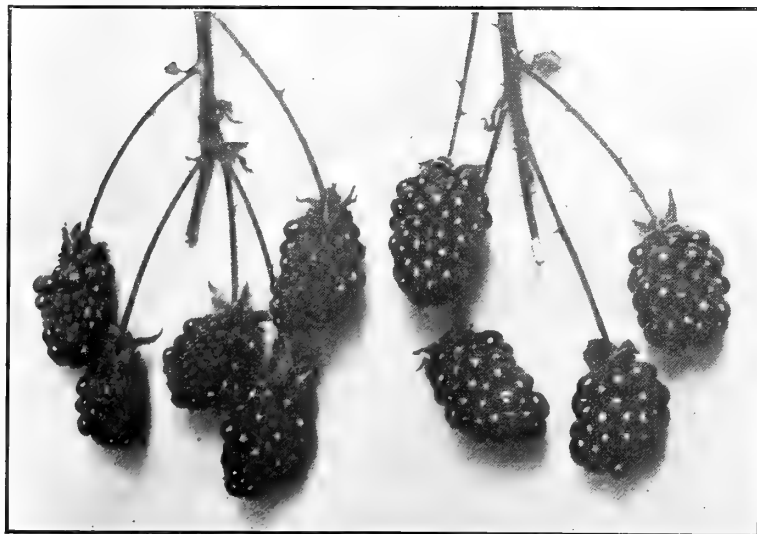


FIGURE 4—LAWTON BLACKBERRIES BADLY INFESTED WITH ANTHRACNOSE  
The healthy drupels are plump and smooth, while the diseased ones are dry and shriveled.

Read article by W. H. Lawrence, page 73 of this issue

The powdery-mildews of the grape and of the rose also belong to this group. These diseases may be prevented by proper fungicidal treatment, the same as disease of group one, and, in addition, they may also be cured by such treatment. The mycelium, being exposed upon the surface of the host, may be reached and killed by proper fungicides.

For years paris green was used more extensively than any other poison. It first supplanted London purple, but has, in turn, been supplanted by arsenate of lead and various other compounds of arsenic. Pure, it is among the most reliable of insecticides, but has the disadvantage that it is a rather coarse crystalline substance, which settles rapidly to the bottom of the spray-tank unless the contents are kept thoroughly stirred. For codling moth, bud moth, tent caterpillars and many other insects of group one it is generally used as a spray in the following proportions:

- (1) Paris green ..... 1 pound  
Quick lime ..... 4 to 5 pounds  
Water ..... 160-200 gallons

Slake the lime, stir the poison into a thin paste with a little water, add this to the lime, then strain the mixture through a sieve into a tank containing the required amount of water. If it is desired to spray for both fungi and insects, lime-sulphur No. 25, or bordeaux mixture (15 or 16) may be used in place of the water in the above formula. For peach or other tender foliage 300 gallons of water or bordeaux (17) should be used. It is necessary to keep this mixture well stirred while spraying.

Arsenate of lead is now the chief poison used in spraying for the codling moth, although paris green gives approximately as good results, and is preferred by some. Many brands of commercial arsenate of lead are now to be had, and so far as our observations go, nearly all are reasonably pure. The various brands may, however, be arranged into the two definite groups, which may be termed the acid arsenates and the ortho or neutral arsenates. While the evidence is not conclusive, it appears to be true that the acid arsenates have some tendency to injure foliage, and cannot so well be

used with lime-sulphur solutions as can the neutral arsenates.

Most manufacturers advise the use of three pounds of arsenate of lead to 50 gallons of water. The Washington Experiment Station has demonstrated that in the dry climate of Eastern Washington one pound to 50 gallons gives equally good results in controlling codling moth. We have found that two pounds are sufficient in the Willamette Valley. It is quite probable that one pound may be sufficient here, but since this has not been demonstrated we think it best to advise two pounds to 50 gallons for the more humid portions of this state.

The following table represents the composition of the various commercial lead arsenates which have been examined by the department of chemistry, Oregon Agricultural College:

(2) Contents	Swift	Star	Grasselli	Lion	Sherwin-Williams	Sherwin-Williams	Bean	Hemingway
Moisture .....	43.45	54.02	38.95	58.40	49.55	51.84	41.68	32.46
Total lead oxide .....	34.47	32.99	43.11	26.19	41.00	33.11	42.19	42.64
Total arsenic oxide .....	16.68	10.72	14.85	12.26	5.17	12.35	13.47	21.45
Soluble impurities .....	1.82	.31	.16	.61	2.85	1.58	1.60	.93
Soluble arsenic oxide .....	.45	.10	.39	.12	.15	.11	.10	.31
Totals .....	96.42	98.04	97.07	97.46	98.57	98.88	98.94	97.48

Some growers prefer to prepare the arsenate of lead as it is used. This is but little, if any, more troublesome than to mix the prepared arsenates in water, and should be somewhat cheaper. It can be readily prepared after the following formula:

- Arsenate of soda ..... 4 ounces  
Acetate of lead ..... 11 ounces  
Water ..... 15 to 20 gallons

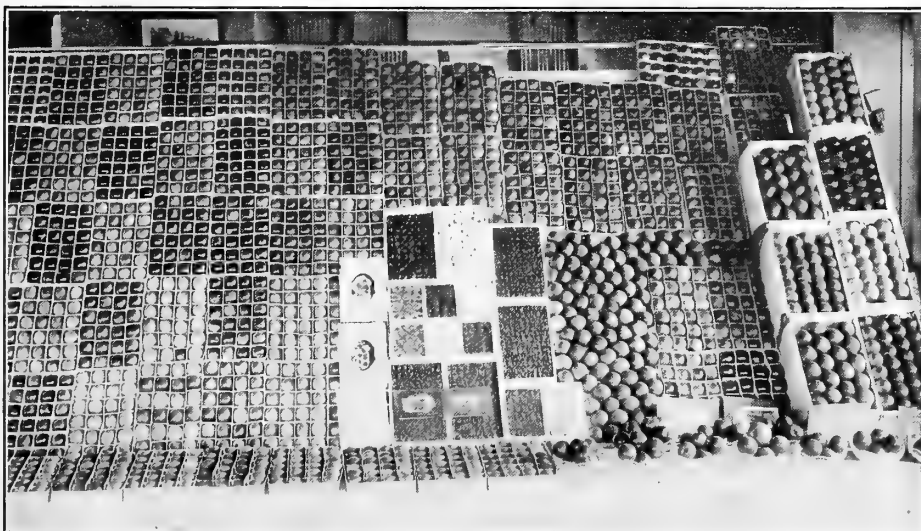


EXHIBIT OF FRUITS AT THE IDAHO STATE HORTICULTURAL SOCIETY MEETING HELD AT THE BOISE COMMERCIAL CLUB ROOMS, BOISE, IDAHO, JANUARY, 1911.

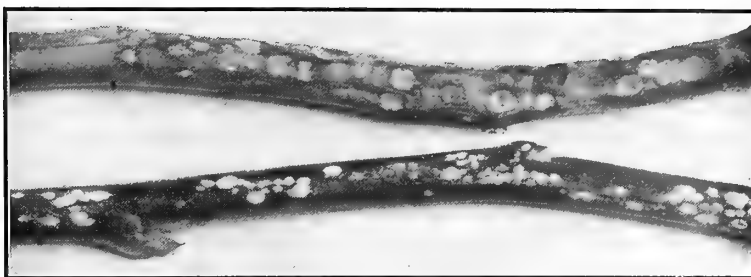


FIGURE 1—SPOTS ON STEM OF ANTWERP RED RASPBERRY, CAUSED BY ANTHRACNOSE FUNGUS

Read article by W. H. Lawrence, page 73 of this issue

Dissolve the arsenate of soda in two quarts and the arsenate of lead in four quarts of warm water in wooden vessels. When dissolved, add them to the required amount of water.

This formula is especially valuable for spraying very delicate foliage, or for use against insects which are killed only by large amounts of poison, since it can be used upon plants in much stronger solutions than the other food poisons without injury to the foliage.

If it is desired to use a combined insecticide and fungicide, arsenate of lead may be added to bordeaux or to lime-sulphur solution in the same proportion as when water is used.

It is often convenient to apply poisons by dusting. Dry paris green may be so applied, either pure or adulterated with various substances. If used pure it

should be dusted from a cloth sack of suitable texture and only the faintest trace of the poison should appear upon the plants treated. One or two pounds should be sufficient to treat an acre of any low-growing crop.

To avoid using excessive and dangerous amounts of the poison it is usual to adulterate it as follows:

- (3) Paris green ..... 1 pound  
Wheat flour or finely slaked quick lime ..... 25 to 50 pounds

Mix the ingredients thoroughly and dust until the plants show a faint trace of white. For dusting only a few plants use a perforated tin can or other sifter. To cover a large acreage use one of the "dust sprayers" which are on the market.

The so-called "dust spray" for use in orchards is cheaper than spraying with liquids, but results so far obtained indicate that it is less effective for most purposes. Dust spraying has not been tested by this station, but the results of three years' careful work at the Illinois Experiment Station in testing dust sprays in comparison with liquid sprays has been summarized by Professor C. S. Crandall, apple specialist, as follows:

"With regard to effect upon foliage the results were identical in all orchards, and in all seasons. Trees sprayed with liquid bordeaux and paris green retained



their foliage in healthy working condition throughout the season. The dust sprayed and check trees may be spoken of together, because the behavior of the foliage was the same on both. Leaves began falling from these trees in July, and by early September they were practically denuded. The loss of foliage by dust sprayed and check trees was due to apple scab, against which disease the dust spray was entirely ineffective. Differences in fruit was as marked as were differences in foliage. Liquid sprayed trees gave smooth fruit of good size. Dust sprayed and check trees gave small, ill-formed fruit, badly marked by scab and fruit blotch, and of very little value even as evaporator stock. Dust spray is 52 per cent cheaper than liquid spray, and it is easier to transport about the orchard. This is as far as I can go in an enumeration of its advantages. It is utterly worthless as a means of controlling orchard enemies, and money spent in its application is thrown away."

Grasshoppers, cut-worms and a few other pests may be destroyed by poisoned baits. These are prepared in various ways. Small bundles of green, succulent vegetation, dipped in a strong solution of any of the above poisons and scattered about the infested field or garden will prove exceedingly tempting to cut-worms, particularly if the field was plowed in early spring and is free from vegetation. Such baits are most effective if used in spring just before the crop to

be protected comes up. Poisoned slices of potato or some similar vegetable are used to poison the sow-bugs and wire-worms. Cultivated trees and vines may be successfully protected against the ravages of grasshoppers by use of the so-called bran-arsenic-mash, which is made as follows:

- (4) White arsenic.....1 pound  
Brown sugar .....1 to 2 pounds  
Bran .....6 pounds

Mix the ingredients thoroughly, then add enough water to make a wet mash. A spoonful should be placed at the base of each tree or vine. For cut-worms a still better bait may be prepared by mixing thoroughly paris green, bran and middlings as follows:

- (5) Paris green.....1 pound  
Middlings .....15 pounds  
Bran .....15 pounds

This may be sown broadcast upon the vegetation about the borders of cultivated fields or gardens; or by use of a seed drill it may be sown along the rows of plants to be protected. So used it has been found especially valuable for destroying cut-worms in onion fields.

Powdered hellebore, if fresh, is of value for poisoning insects which are injuring small fruits or vegetables which are nearly ready for market, and on which it is undesirable to use the arsenical poisons. It may be dusted over the plants when they are moist with dew, or may be used as a spray in the following proportions:

- (6) Hellebore.....1 ounce  
Water.....2 gallons

Strong soap suds, made from any good soap, are useful for destroying soft-bodied insects like plant lice. It is usual, however, to employ for this purpose special soaps made with fish-oils, and sold as whale-oil soaps. These vary considerably in composition, some being made with soda, others with potash lye. The latter are much superior, and buyers should insist on having potash soaps.

For scale insects, whale-oil soap is sometimes used in as concentrated a solution as two pounds of soap to one gallon of water, but only upon dormant plants. As a remedy for the various plant-lice one pound of soap to eight or ten gallons of water is usually sufficient. Hop growers are inclined to believe that better results are obtained, when spraying for hop-lice, by adding some quassia decoction to the soap solution, as follows:

- (7a) Whale-oil soap .....10 pounds  
Quassia .....5 pounds  
Water .....100 gallons

Place the quassia chips in a sack, cover with eight or ten gallons of water and soak twelve to twenty-four hours. Then bring to a boil, remove the chips, add the soap and boil until it is dissolved. Add water to make 100 gallons. If preferred, the grower may prepare his own whale-oil soap after the following formula:

- (7b) Potash lye.....1 pound  
Fish oil .....3 pints  
Water .....2 gallons

Dissolve the lye in the water. When boiling hot add the oil and boil about two hours. Add water to make two gallons. Each pound of the soap thus made should be dissolved in eight or ten gallons of water. It will be found a satisfactory remedy for hop-lice and other soft-bodied insects.

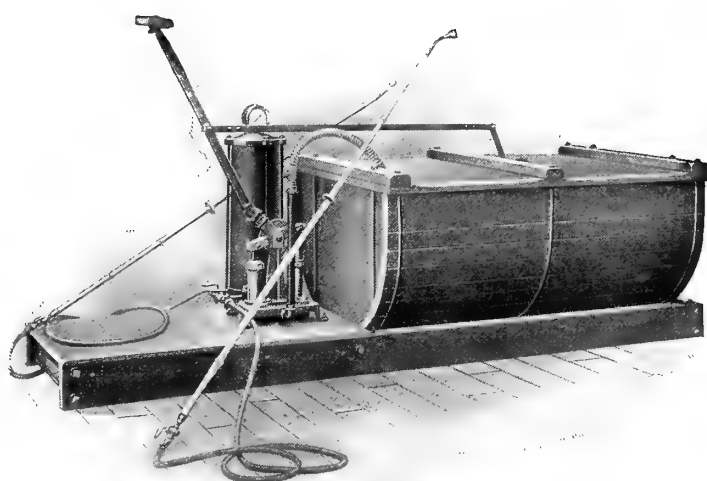
Kerosene oil, or coal oil, is a powerful insecticide. The undiluted oil is, however, liable to seriously injure plants to which it is applied. This difficulty is overcome by using one of the special spray pumps which have been devised for the purpose of mixing the oil with water in any desired proportion; or by forming an emulsion with some substance that may be readily diluted with water. Soap is most commonly used for this purpose, as follows:

- (8) Kerosene oil .....2 gallons  
Hard soap (preferably whale oil) .5 pound  
Water .....1 gallon

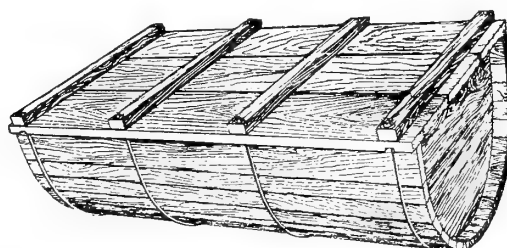
Dissolve the soap in the water by boiling. Add the suds, boiling hot, to the oil. Churn the mixture violently with a spray pump until it becomes a thick, creamy mass. If perfectly emulsified, the oil will not rise to the surface even after standing an indefinite time. Such an emulsion may be used immediately or may be kept as a stock mixture. Before using, dilute one part of the stock emulsion with eight or ten parts of water.

This will be found to be an efficient remedy for green-aphis, woolly-aphis, red-spider, mealy-bugs and for certain scale-insects.

This is a favorite spray in California for several of the scales infesting citrus fruits. In this state its chief value is as



TWIN CYLINDER PNEUMATIC HAND PUMP AND 150-GALLON TANK MOUNTED ON PLATFORM WITH AGITATOR



SPRAYER TANK



BAMBOO EXTENSION ROD

a spray for the various kinds of plant-lice. For this purpose it may be used as a substitute for kerosene emulsion or whale-oil soap with good results, particularly in the dry summer months. It can also be used as a summer spray for San Jose scale, but we do not advise such use, since summer sprays for this pest are less efficient than the winter spray of lime and sulphur. The resin wash may be made as follows:

- (9) Resin .....20 pounds  
Concentrated lye .....4 pounds  
Fish oil .....2½ pints  
Water .....100 gallons

Place the resin, lye and oil in a kettle with sufficient water to cover them to a depth of three or four inches. Boil about two hours, making occasional additions of water, or until the compound resembles very strong black coffee. Dilute to one-third the final bulk with hot water, or with cold water added slowly over the fire, making a stock mixture, which must be diluted to the full amount of 100 gallons when ready for use.

Carbolic acid emulsion is used to destroy the eggs and the young maggots which infest radishes, onions and similar garden crops; and occasionally for other insects:

- (10) Crude carbolic acid .....1 pint  
Hard soap .....1 pound  
Water .....1 gallon

Dissolve the soap in boiling water; add the acid and churn as for kerosene emulsion. Use one part of emulsion to thirty parts water.

The tobacco waste from cigar factories is of considerable value as an insecticide. In greenhouses, it may be used to destroy plant-lice by simply spreading the waste two or three inches deep over the pipes under the benches, or by burning about one-half pound of moist waste to each 500 square feet of glass. Worked into the soil about young apple trees in the orchard or nursery, it is one of the best remedies for the root form of

woolly-aphis. A strong decoction, made by a prolonged steeping of a quantity of stems in enough water to cover them and diluting the liquid to the color of strong tea, is often used as a spray for plant-lice. A still better method is as follows:

- (11) Hard soap (preferably whale-oil) .1 pound  
Water .....8 to 10 gallons  
Strong tobacco decoction .....1 gallon

Dissolve the soap in boiling water, add the tobacco decoction and dilute to eight to ten gallons.

The various tobacco soaps and other tobacco preparations are supplied by the trade both for greenhouse and orchard use. In fact the most satisfactory spray known for destroying orchard plant-lice is the Black Leaf spray, which is supplied by the Kentucky Tobacco Co., Louisville, Kentucky. It dilutes readily with water, and is efficient when used in the proportion of one gallon of Black Leaf to 60 to 75 gallons of water.

Fresh pyrethrum powder is a valuable remedy for flies, mosquitoes, roaches, ants, fleas and other household pests. It is destructive to insects, but not poisonous to the higher animals, or to man. It should be kept in an air-tight receptacle. The dry powder may be dusted over the floors, or in the hair of dogs infested with fleas, or about their sleeping quarters, or in other places where obnoxious insects congregate. It may also be used as a spray in conservatories or on a few plants in the garden, in the following proportion:

- (12) Pyrethrum .....1 ounce  
Water .....2 gallons

It is also stated that the flies and mosquitoes in a room may be destroyed by burning a little pyrethrum powder upon some live coals.

Bisulphide of carbon (13) is a colorless liquid with a very disagreeable odor. It is very volatile, and its fumes are poisonous to animal and plant life. When

mixed with air in the proper proportion they are also very explosive. As an insecticide it is valuable mainly as a remedy for subterranean insects, borers, or insects infesting stored grains, seeds, etc., and for fumigating buildings which are infested with noxious insects. It is also used extensively for destroying various burrowing animals whose burrows incline downward into the earth. For this purpose pour two or three ounces of the liquid upon a ball or rags, or other absorbant; place this well down into the burrow and close the opening. Thus used it is an effective remedy for "digger squirrels" and "prairie dogs," but is not effective against moles and pocket gophers, which construct long horizontal burrows. Troublesome ants' nests may be destroyed by making a hole in the center of each nest and pouring into it two or three ounces of the liquid, after which the hole should be tightly closed. For destroying the root form of woolly-aphis of the apple it is common to make several holes, each six to twelve inches deep, about the tree and pour one or two ounces of the liquid into each hole, which should be immediately closed.

Borers in the roots of peach or prune trees may be destroyed by simply pouring from one to three ounces of the liquid, according to the size of the tree, about the base of the tree. If the soil is wet or compact it is best first to excavate a shallow trough about the tree and fill this with loose soil before applying the chemical.

For fumigating grains, seeds, store-houses and other buildings, including houses, for the destruction of insects, one pint of the liquid is used for each ton of grain or 1,000 cubic feet of space. The building, bin or other receptacle should be tightly closed, and kept closed 24 to 36 hours. During this time no person should attempt to enter the building, nor should any light be allowed inside until it has been thoroughly ventilated, since the fumes are both poisonous and explosive.

This is an extremely poisonous gas, which is used in this state principally to fumigate nursery stock. In California it is used to fumigate citrus trees which are infested with scale insects. It has also been used in the East to fumigate scale-infested deciduous fruit trees. Although very efficient, the process is so much more expensive than spraying that I do not recommend its use in this state.

Many nurseries now have especially prepared houses, or fumigatoriums, in which to fumigate infested stock. For dormant stock the chemicals are used in the following proportions for each 100 cubic feet of space inclosed:

- (14) Cyanide of potassium (98%) .....1 ounce  
Sulphuric acid .....1 ounce  
Water .....2 ounces

Place the water in an earthenware or wooden receptacle, add the acid and when all is ready drop in the cyanide of potassium, close the door, and keep it closed for at least forty minutes. Do not attempt to enter the house until it has been thoroughly ventilated.

Greenhouses may be fumigated to destroy plant-lice, mealy-bugs, slugs,

## TWO THOUSAND MORE MEMBERS ARE WANTED

**T**WO THOUSAND members is the goal of the membership committee of the Washington Horticultural Association, of which C. L. Whitney of Walla Walla, is a member. He states that before the Clarkston convention, a year hence, the membership will be doubled; and to make good he will double that of the Walla Walla Valley.

There were, previous to the meeting of the convention adjourned this week, about 600 members, but this number was raised to the ten century mark before the close of the week. With this as a starter, the committee hopes to add 1,000 more names before January 1, 1912.

Fruit growers of Oregon and Idaho will not be barred from membership, although the organization is primarily for the State of Washington. As the next meeting is just across the river from Lewiston, it is believed there will be many orchardists from that section of Idaho who will join.

"Membership is well worth while," said Mr. Whitney yesterday. "For to every member will be given the printed proceedings of the convention at Prosser, and this book will contain every

speech, every word of discussion and every remark of the entire convention. There will be between its covers, therefore, nearly everything that is of interest to a fruit grower in the Northwest.

"Lectures on spraying, pruning, planting, picking, packing, shipping, selling, every phase of horticulture, will be found in the book, and it is given to every person who pays the one dollar membership fee. The book is worth more than this amount, by far, for it is an excellent dictionary of information to any fruit grower, and contains the opinions and experiences of the best orchardists of the state."



Editor Better Fruit:

No doubt many subscribers are anxious to secure some good publication on apple and fruit culture, and for their benefit I would like to explain how to obtain the best possible book. Having become a subscriber with the first issue, I of course have all the numbers of "Better Fruit," and have them bound with about eighteen numbers to a book. I have the binder put an index in front of the book and each page renumbered, and by simply glancing at the index can locate very quickly any article I wish on any subject. All the articles being written by practical and experienced fruit growers, makes such a book, in my opinion, much more valuable than can be bought in any book store.—G. A. Cooper, Portland, Oregon.

millipedes, etc., but since there is a wide range in the susceptibility of various plants to injury by the gas it is not thought best at this time to give general directions for such work. As a basis for any experimental tests which growers may care to make the above formula is advised for each 350 cubic feet of space to be fumigated, and with the house tightly closed for fifteen to twenty minutes. Previous arrangements should be made for opening the ventilators from the outside.

Next to lime-sulphur, bordeaux mixture is perhaps the most generally useful of all spraying compounds. It is the principal remedy for fungus diseases, is of some value as an insecticide, has a beneficial effect upon plants independent of its effect upon their insect and fungus parasites, and may be used for most purposes in place of water in the preparation of the arsenical sprays.

Bordeaux mixture for winter use may be made as follows:

- (15) Copper sulphate ..... 6 pounds  
Quick lime ..... 6 pounds  
Water ..... 50 gallons

This is known as the 6-6-50 formula. It should be used only upon dormant trees.

When the trees are in leaf the following 4-4-50 formula is used:

- (16) Copper sulphate ..... 4 pounds  
Quick lime ..... 4 pounds  
Water ..... 50 gallons

For spraying peach foliage it is best to use the still weaker 3-3-50 formula:

- (17) Copper sulphate ..... 3 pounds  
Quick lime ..... 3 pounds  
Water ..... 50 gallons

To prepare bordeaux mixture dissolve the copper sulphate in hot or cold water in a wooden or earthen vessel. Slake the lime, using only sufficient water to insure slaking. The lime should not be allowed to become dry while slaking, nor should it be submerged in water. After the lime is slaked add water and stir until the "milk of lime" is of the consistency of cream. The best results are obtained by diluting the milk of lime and the copper sulphate solution each to 25 gallons, and then pouring these two dilute solutions together. The lime solution should always be strained through a sieve to exclude particles that might clog the nozzles. A brass wire sieve, twenty-mesh, large enough to fit the head of a barrel or the opening in the spray tank will prove a very great convenience.

When large quantities of bordeaux are required it is most convenient to make stock solutions of lime and of copper sulphate of known strength. A convenient stock solution of copper sulphate is made by dissolving 100 pounds in 50 gallons of water; one of lime, by slaking 100 pounds and diluting with water to 50 gallons. Each gallon of the stock solutions will then contain two pounds of lime or of copper sulphate, and the amount to be used in preparing any quantity of bordeaux according to the above formulas can be readily computed.

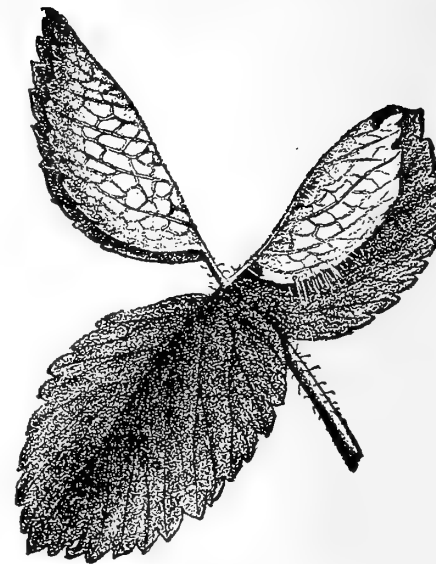
There are three simple bordeaux tests which may be used. First, hold a clean, bright knife blade in the bordeaux for at least one minute. If it becomes copper-plated more lime should be used. Second, pour some of the bordeaux into a shallow dish, and, holding it up to the light, blow gently across its surface. If properly made a thin pellicle will form on the surface of the liquid. If this does not form more lime should be added. Third, dissolve one ounce of ferrocyanide of potassium in five or six ounces of water. Pour some of the bordeaux into a white dish and add to it a few drops of the ferrocyanide solution. If sufficient lime has been used no change will be noticed. If a brownish-red discoloration takes place more lime should be added.

A simple solution of copper sulphate is used as a remedy for grain smuts, and sometimes as a spray in place of bordeaux. For dormant trees use:

- (18a) Copper sulphate ..... 1 pound  
Water ..... 25 gallons

For trees in foliage use:

- (18b) Copper sulphate ..... 1 pound  
Water ..... 250 gallons



RESULT OF STRAWBERRY LEAF ROLLER  
Strawberry leaves showing appearance after being folded. (After Weed.)  
Colorado Experiment Station

For smut of wheat or oats soak the seed for ten to twelve hours in a solution of one pound of blue vitriol to 25 gallons of water, then put the seed for five or ten minutes into lime water, made by slaking one pound of lime and diluting it with 10 gallons of water.

The treatment with lime water tends to prevent the copper sulphate solution from injuring the seed, but most farmers omit that part of the treatment.

Bordeaux mixture has the disadvantage that it produces an unsightly deposit upon foliage, blossoms and fruit, and hence cannot well be used upon florists' plants or upon fruits nearly ready for market. For use under such conditions the ammoniacal copper carbonate, the simple copper carbonate mixture or the copper acetate solution is recommended.

- (19) Copper carbonate ..... 5 ounces  
Strong ammonia ..... 3 pints  
Water ..... 50 gallons

Mix the copper carbonate into a paste with a little water, add the ammonia, and when the copper carbonate is completely dissolved pour the resulting deep blue liquid into the water.

- (20) Copper carbonate ..... 1 pound  
Water ..... 50 gallons

Mix the copper carbonate into a paste with a little water before attempting to add it to the 50 gallons.

- (21) Dibasic acetate of copper ..... 6 ounces  
Water ..... 50 gallons

Use finely powdered acetate of copper, mix it into a paste with a little water, then dilute with the full amount of water.

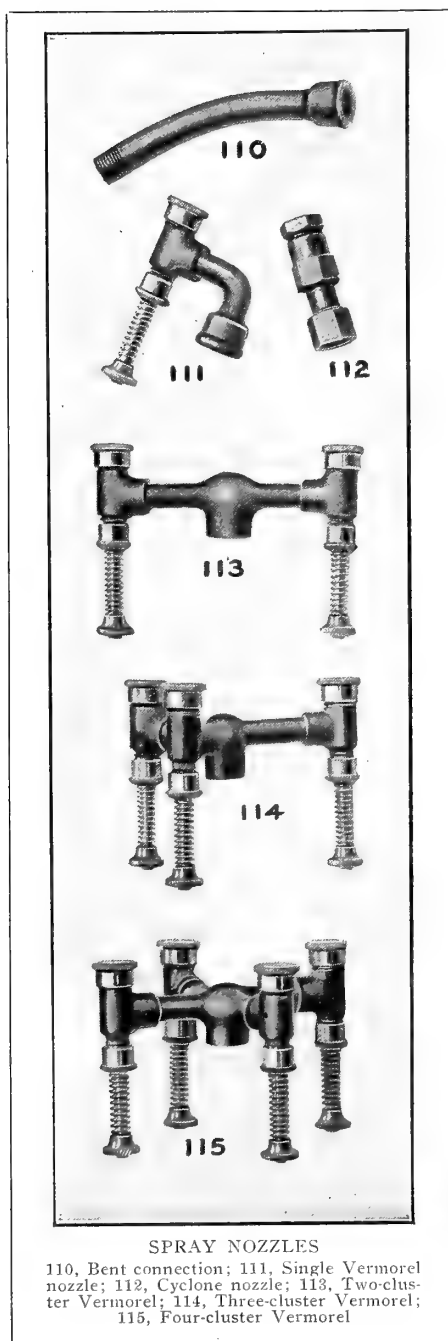
- (22) Potassium sulphide ..... 1 ounce  
Water ..... 2 to 3 gallons

Dissolve the potassium sulphide in the water.

Valuable as a spray for mildews.

- (23) Corrosive sublimate ..... 1 ounce  
Water ..... 7 to 8 gallons

This is valuable as a preventive of potato scab. In a wooden vessel dissolve the poison in one gallon of water, then dilute to the full amount. Place the scabby seed potatoes in a sack, immerse them in the solution and allow them to soak one to two hours. The solution



SPRAY NOZZLES

110, Bent connection; 111, Single Vermorel nozzle; 112, Cyclone nozzle; 113, Two-cluster Vermorel; 114, Three-cluster Vermorel; 115, Four-cluster Vermorel

and the treated potatoes are extremely poisonous.

Formalin, a 40 per cent solution of formaldehyde gas in water, is being used extensively as a preventive of potato scab and of the grain smuts, and gives most excellent results. It is cheap, efficient and non-poisonous. For potato scab soak the seed two hours in the following solution:

(24a) Formalin .....½ pint  
Water .....15 gallons

For grain-smuts soak the seed for one to two hours in the following:

(24b) Formalin .....1 pint  
Water .....50 gallons

It is often desirable and practicable to use sprays which combine both fungicidal and insecticidal qualities. The time, expense and annoyance of one or more sprayings may frequently be eliminated by such combinations. Thus bordeaux mixture and paris green, or arsenate of lead, have long been used as a combined spray for apple-scab and codling moth, and the expense of controlling these two important apple pests has thereby been materially reduced. This spray, however, combines only the fungicidal value of bordeaux and the food poison value of the arsenical. It is of little or no value as a contact insecticide—in other words, it is of no value against scale insects, plant-lice and the numerous insects which belong to group two.

During the past three years we have conclusively demonstrated that the lime-sulphur spray, which has long been known as the most satisfactory winter spray for San Jose scale, has fungicidal qualities nearly or quite equal to those of bordeaux. We have also conclusively demonstrated that it may be used in combination with arsenate of lead without materially detracting from the value of either; and that when so used it is at once an efficient contact insecticide, food poison spray and fungicide.

It also has the advantage that when properly diluted it may be used either as a winter or summer spray.

As a winter spray one application of lime-sulphur spray each year will do more for the neglected orchard than can be done in any other way by the same expenditure of cash and energy. It not only destroys San Jose scale, but it also destroys the branch form of woolly-aphis, the eggs of the green-aphis, the pear-leaf aphid blister mite, the hibernating larvae of the prune twig-miner, probably the hibernating larvae of the

bud-moth, together with most other insects which may chance to be wintering upon the trees. It is also a good fungicide. If applied in fall it is nearly or quite equal to bordeaux as a preventive of apple-tree anthracnose, and when applied to peach trees just before the buds open in spring it is a preventive of peach-leaf curl.

As a summer spray the results of the past three seasons' work at the Oregon Experiment Station prove conclusively that when properly diluted it can be safely used upon the apple, pear, plum and prune, potato, celery and other hardy plants, and that it gives better results in controlling apple scab than does bordeaux, which has been the standard spray for this disease, and, further, that it does not produce the disastrous "spray injury" to the fruit which is so common, and often serious, when bordeaux is used.

There are two methods of preparing the lime-sulphur spray. The formula which has been most generally used in this state is as follows:

(25a) Quick lime .....50 pounds  
Sulphur .....50 pounds  
Water .....150 gallons

Slake the lime thoroughly, add the sulphur and boil briskly for at least an hour, or until the mixture is of a deep blood-red color with but little free sulphur on the surface. Add water to make 150 gallons. Apply with considerable force through a coarse nozzle.

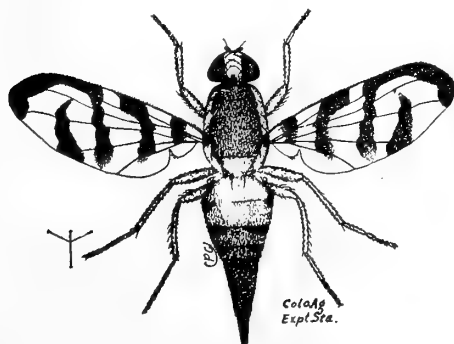
The "stock solution" method which is now most generally used in this state has been developed during the past three years. During that time there have appeared upon the market a number of concentrated lime-sulphur solutions, which have only to be diluted with water to be ready for use. Careful experiments extending over three seasons have fairly demonstrated that these sprays are fully equal to the old home-made lime-sulphur spray in destroying San Jose scale. Whether all of them can safely be used for summer spraying is yet to be demonstrated.

The chief fault to be found with these commercial preparations is that they cost too much. The retail price is \$9 to \$12 per barrel of 50 gallons. The lime and sulphur necessary to prepare 50 gallons of stock solution, which is equally as efficient, costs at present retail prices approximately \$3. It may be prepared as follows:

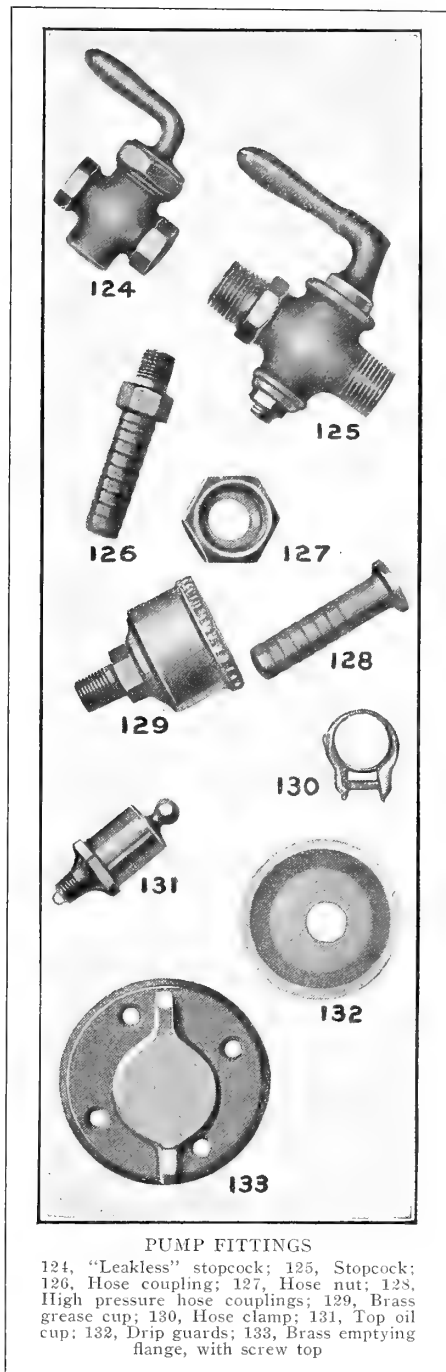
(25b) Sulphur (best finely ground) one sack .....110 pounds  
Lime (best grade) unslaked .55 pounds  
Water, sufficient to make.....60 gallons

Slake the lime, mix the sulphur into a thin paste with a little water, add it to the lime, add sufficient water to make 60 gallons, bring to a boil and boil vigorously for thirty to forty-five minutes. The sediment is then allowed to settle, after which the clear, dark amber-colored liquid is drawn off, and may be stored in casks for future use.

Every grower who expects to prepare his own spray by the stock solution method should provide himself with a Beaume acid scale hydrometer. Such an instrument, which should not cost over \$1, furnishes a very simple and convenient method of testing the strength



ADULT OF CURRANT AND GOOSEBERRY  
FRUIT MAGGOT  
Colorado Experiment Station



PUMP FITTINGS

124, "Leakless" stopcock; 125, Stopcock; 126, Hose coupling; 127, Hose nut; 128, High pressure hose couplings; 129, Brass grease cup; 130, Hose clamp; 131, Top oil cup; 132, Drip guards; 133, Brass emptying flange, with screw top

of the solution. A "stock" solution, prepared as above described, should test approximately 30° upon such a scale.

If the grower be provided with a hydrometer it is not at all necessary to obtain the stock solutions of uniform strength. The following table gives the proper dilution to be used with stock solutions of various degrees of density, both for winter and summer spraying:

(25c)	Stock Solution	Winter Dilution	Summer Dilution
32°	Beaume scale.....	1—12	1—32
31°	Beaume scale.....	1—11	1—31
30°	Beaume scale.....	1—10	1—30
29°	Beaume scale.....	1—9½	1—29
28°	Beaume scale.....	1—9	1—28
27°	Beaume scale.....	1—8½	1—27
26°	Beaume scale.....	1—8	1—26
25°	Beaume scale.....	1—7½	1—25
24°	Beaume scale.....	1—7	1—24
23°	Beaume scale.....	1—6½	1—23
22°	Beaume scale.....	1—6	1—22

General directions as to how many times to spray and when the applications should be made are at best unsatisfac-

Continued on page 53



# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF

THE NORTHWEST FRUIT GROWERS' ASSOCIATION

A MONTHLY ILLUSTRATED MAGAZINE

PUBLISHED IN THE INTEREST OF MODERN

FRUIT GROWING AND MARKETING

ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD

EDITOR AND PUBLISHER

C. R. GREISEN, Assistant Editor

H. E. VAN DEMAN, Contributing Editor

STATE ASSOCIATE EDITORS

OREGON

A. B. CORDLEY, Entomologist, Corvallis

C. I. LEWIS, Horticulturist, Corvallis

P. J. O'GARA, Pathologist and Entomologist,

Medford

WASHINGTON

W. S. THORNER, Horticulturist, Pullman

A. L. MELANDER, Entomologist, Pullman

COLORADO

C. P. GILLETTE, Director and Entomologist,

Fort Collins

E. B. HOUSE, Chief of Department of Civil and

Irrigation Engineering, State Agricultural

College, Fort Collins

E. P. TAYLOR, Horticulturist, Grand Junction

IDAHO

W. H. WICKS, Horticulturist, Moscow

UTAH

DR. E. D. BALL, Director and Entomologist, Logan

LEON D. BATCHELOR, Horticulturist, Logan

MONTANA

O. B. WHIPPLE, Horticulturist, Bozeman

CALIFORNIA

C. W. WOODWORTH, Entomologist, Berkeley

W. H. VOLCK, Entomologist, Watsonville

BRITISH COLUMBIA

R. M. WINSLOW, Provincial Horticulturist, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR

IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,  
at the Post Office at Hood River, Oregon,  
under Act of Congress of March 3, 1879.

IT is the editor's aim to watch conditions closely and be observant on all occasions. Naturally, in visiting the many different sections during the year and through contact with buyers, of whom the editor meets a great many, and personal visits not only throughout the Northwest but throughout the East, the editor, by being observant, absorbs considerable information and draws many conclusions. These it is our aim from time to time to present in "Better Fruit," editorially or otherwise, for the consideration of the fruit grower. It is not our intention to have our readers assume that these opinions are always correct conclusions. We do not wish anyone to assume our statements to be facts. Our views are presented for consideration and investigation, and it is our hope that in this way the growers in all sections will be influenced more or less through the columns of "Better Fruit" to investigate more fully for their own benefit the matters presented to them for consideration.

NEARLY all orchardists who are familiar with the prices realized in New York and Chicago during the previous year felt that these two cities were the proper places to send our fruit, particularly apples. The result was that these two markets became glutted while many other very good consuming cities received no supply at all.

Apples this year grew to be very large in size. It is admitted by all, and well

known by dealers, that the very large apples like 72 and 54, of which there were many, will not keep as long as the smaller sizes. The proportion of these very large sizes this year, on account of the splendid growing season, was very large. Dealers did not buy them heavily to put in cold storage, fearing the keep. Consequently they were put on the market in large proportions for immediate sale. As a matter of fact, up to the present writing, the keep of Northwestern apples in cold storage has been reported excellent and comparatively few cars were reported off condition on arrival. However, many apples were delayed in being shipped and the keep fore-shortened. While this was unavoidable it was all wrong. Everyone knows that the quicker an apple is packed and shipped and put under ice after it has been picked the longer it will hold up in cold storage.

A great many of the subjects covered editorially in this issue are covered more completely in an address delivered by the editor before the Washington Horticultural Society at Prosser, which will appear in the first edition of "Better Fruit" affording space.

Marketing conditions this year were affected by financial conditions, and financial conditions were probably disturbed by the political situation. Capital and banks anticipated over a year ago that money would be tight. This anticipation caused the banks to increase their reserve, and increasing the reserve meant just so much money drawn out of circulation. This made money tighter and times harder, and consequently the fruit business and all other lines of business were affected to a greater or lesser extent. In such conditions people economize. Financial situations that render economizing necessary not only interfere with the price of fruit but with the sale and with consumption. In marketing fruit in the year 1910 all this has been evident. A peculiar situation has arisen which many growers do not understand. A simple explanation, however, will make it clear. As a matter of fact the higher quality of varieties which bring higher prices have been slower sellers than the medium quality grades of apples. The reason for this is that the buyer who is economizing took the cheaper quality in preference to the higher quality because it cost him less money. Another strange feature which has not existed in previous years is that smaller sized apples have sold more readily than the larger sizes. Dealers preferred the 128 and 150 to 88 and 96 packs. The reason again is simple. One hundred and fifty apples to a box will go further in a family of children than ninety-six.

There were many other features connected with marketing our fruit last year which in a greater or lesser degree affected the prices and account for prices being somewhat lower in 1910 than during the several years previous. As a matter of fact, from observation, it is our personal opinion that more adverse conditions existed in marketing our apple crop this year than during all of the pre-

ceding seven years with which we are familiar with the apple business. The past year has been full of experiences, and better knowledge has been obtained about marketing our apples and fruit crop in general than ever before, and it is fair to assume that this better idea of marketing conditions and salesmanship will enable us to place our crops in the future years to a better advantage.

While the increased crop of apples during the past year over previous years in the Northwest had something to do with affecting prices, one absolutely familiar with the business for the past eight years cannot help but feel that our lower prices this year were due to financial conditions rather than to increased quantity.

Pemberton, B. C., Jan. 3, 1911.

Mr. E. H. Shepard, Esq.

Dear Sir: I was under the impression that I had sent you the 25 cents for the September number of "Better Fruit" at the same time I returned the December number. I now enclose the necessary amount, and at the same time would like you to know what I heard said about your paper at a recent packing class.

"'Better Fruit' is the best one dollar's worth on the Pacific Coast, bar none. The others of a similar nature are merely second-rate copies of it." Which remarks I heartily endorse.

Yours faithfully,

E. J. Keddell.

WE have received such splendid prices for our fruit in the past years that economy in production has practically been ignored. However, we are no different in this respect from many large industrial enterprises. Business in the United States in the last two years has been exceedingly prosperous, very active and profits large, and it was not necessary to economize in production, at least we thought it was not necessary. This has also been true with the railroads. Much attention has been devoted recently to reducing running expenses and the cost of production in various enterprises, and is still being given serious study. Railroads are finding that they can save millions of dollars with economizing methods. Sometimes the saving in itself alone is a big profit. A man familiar with one of the big meat concerns stated some time ago that the profit in business really was what they saved by utilizing the waste, consisting of the horns and hoofs, which were made into glue; the hide, which was made into leather; the entrails, which are used for fertilizers. Not an ounce of a carcass is wasted. So it is with the fruit business. We should utilize the culls for by-products.

Some time ago the work of the brick mason was carefully investigated, and it was found after a very thorough study that his movements in handling bricks could so be improved as to facilitate the rapidity with which he worked so that

Continued on page 49

# \$250.00 Reward

## IN GOLD COIN

The above reward is offered for competent proof that Ortho Lime-Sulphur Solution is even equaled or matched by the average output of any other lime-sulphur plant in the United States or Canada in the following points to-wit:

First: The container;

Second: The average strength;

Third: The uniformity.

Ortho Lime-Sulphur Solution is sold in 55-gallon galvanized steel drums; tests always approximately 36 degrees Beaume, about 15 to 20 per cent stronger than any other average solution. The best is never too good. The first cost is no greater than that of the weakly made. The "Ortho Way" is the best. Special prices for the month of March.

## California Spray-Chemical Co.

WAREHOUSES IN PORTLAND AND SEATTLE

WATSONVILLE, CALIFORNIA

## Compare and Contrast these two Photographs



The one on the right shows a tree that has been sprayed with "Ortho 13" Neutral Arsenate of Lead. The one on the left is a tree which was sprayed with neutral (?) arsenate of lead "just as good" as Ortho. The leaves have almost entirely fallen; the fruit is small; not 10 per cent of the fruit will pack four tiers; the fruit buds are damaged, and the probability is that there will be no crop next year.

The other tree, sprayed with "Ortho 13" Neutral Arsenate of Lead, is in perfect condition; the fruit is large; 80 per cent will pack four-tier; not a damaged leaf on the tree, nor on the ground.

"Ortho 13" Neutral Arsenate of Lead should be used in all moist climates, such as is found in Hood River, the west side of the Cascades in Oregon and Washington and British Columbia, and along the coast in California, and on all other plants in all sections, except the apple and pear.

We want to emphasize that the California Spray-Chemical Company is an organization of fruit growers, with chemists and entomologists, for the production of perfect sprays. Our knowledge is at the command of any fruit grower.

## California Spray-Chemical Co.

WATSONVILLE, CALIFORNIA

Warehouses in Portland and Seattle.



# HOOD RIVER

## Makes New High Records

- 1** In competition with twenty-two cars from Northwest Apple Districts. Won Sweepstakes and \$1000 cash prize.
- 2** In competition with four cars Spitzenbergs. Won Best carload of Spitzenbergs and \$250 cash prize.
- 3** In competition with four cars from Northwest Apple Districts. Won Best carload Newtowns and \$250 cash prize.
- 4** Won Association of Chamber of Commerce of Chicago, \$500 Silver Cup for Best Packed Car.
- 5** At Portland, in competition with State of Oregon, Hood River won nearly every entry in one, two, three order.

This only proves our claim of ten years standing—HOOD RIVER is the quality fruit district—the ideal location for *you*

FOR FURTHER INFORMATION WRITE THE

Secretary, **Hood River Commercial Club**, Hood River, Oregon

Continued from page 46

his efficiency was increased 200%. It would seem that this might offer a good suggestion for us in handling our fruits. Now, in our opinion, there is not a doubt that when the fruit grower gives the matter of picking, grading, packing and proper conveniences a thorough study it will result in handling our fruit and growing it in such a way as to make a saving of probably 20%, or 10 cents per box, and 10 cents per box saved is just as good as 10 cents per box made, and in some instances better, because some-

times we do not get the extra 10 cents per box when we are expecting it.

THE Panama Canal Exposition will be held in San Francisco in 1915. This is a glorious victory for San Francisco, and will be of great benefit to the entire Northwest and our great fruit industry. In time refrigerator steamers will be placed on the line between here and New York and Europe, which will enable us to lay our apples down in the Atlantic cities and in Europe for at least one-half of what it costs at present.

## THE IMPORTANCE OF GOOD SPRAY PUMP HOSE

BY F. H. HEARSCH, ALAMEDA, CALIFORNIA

ONE of the most important units of the spraying outfit, and the one which is the source of the most annoyance, and least understood by the grower, is the spray hose. The purchaser of an outfit carefully investigates the merits and good points of the various machines down to the smallest detail; thoroughly familiarizes himself in every possible way with the general make-up and mechanical technicalities of the machine he buys, but when the question of spray hose comes up he takes a blind chance with the hope that inasmuch as spray hose is usually unsatisfactory, fortune will favor him by making this chance the better choice of a multitude.

Undoubtedly, the manufacturing rubber companies are largely responsible for this unfortunate condition, and the ignorance of the purchaser is only a reflection of how little the manufacturers of spray

pump hose know about the severity of the service their product is subjected to, and the proper construction to insure effective results. Especially is this so where such sprays as bordeaux mixture, distillate emulsion, etc., are used, under pressure of from 150 to 250 pounds.

Instead of getting in closest touch with the grower, investigating the unusually severe requirements a satisfactory hose must meet, and through careful laboratory experimentation compounding the rubber stocks to be used in their spray hose so that it will give the best results, the manufacturers have simply met the requirements of the jobbing trade, which has simply been to furnish something at a price and with little or no regard for efficiency.

The spray hose of today is generally manufactured the same as that of several years ago, and yet during this same

period we have seen the conditions of service change absolutely. Formerly the low pressure machines were considered satisfactory, and eighty pounds was all a hose needed to carry. Today we find the most effective machines high powered, and 250 pounds pressure is not unusual. Not only has the pressure increased 300 per cent, but in many localities such rubber destroying mixtures as distillate solutions are generally used, and any grower who has tried the experiment of using the ordinary cheap spray hose under such conditions will appreciate the full importance of this article.

There is no reason why the orchardist should know less about spray hose than any other important part of his spraying machine, and the purpose of this talk is to help the consumer to be a better judge of the hose he buys and thus insure himself against the loss of time as well as the incidental annoyance and damage resulting therefrom. No spraying outfit is stronger than its weakest part, and the weak part is usually the hose.

Pure rubber in its raw state is never used in manufacturing hose or any other product which the consumer usually terms as "rubber." The raw stock is mixed with various ingredients to form a compound which will be suitable for the particular purpose intended. The percentage of pure rubber used in this compound varies according to the needs of the product. In some instances this percentage may run very high, and in others there may be practically no pure rubber at all. In like manner does the

## BEST PROPOSITION IN STATE OF WASHINGTON

Irrigated fruit farm in Stevens County, Washington. The west half of the northwest quarter of section 14, and east half of northeast quarter of section 15, township 36 north, range 38 east W. M., containing 148 acres. Four and one-half miles from Meyers Falls, on S. F. & N. R. R. Down-grade haul from farm to depot. Eight miles from Celville, the county seat. Good roads, good neighborhood, beautiful scenery and almost perfect climate. One-half mile to district school, two miles to boys' and girls' separate schools. Location upland, practically free from frosts. Soil rich and easily tilled; will produce anything to perfection that grows in a temperate zone. Fifty acres in bearing orchard: fifty acres first-class orchard land, now grass and grain; twenty-five acres more can be plowed with but little clearing, balance wood and pasture land.

Orchard consists of about 500 cherry trees, 400 of which are Bing and Lambert, balance high-class commercial varieties; about 100 pear trees and 100 peaches, plums and apricots; rest of orchard has 500 Wealthy and about 3,000 best long-keeping winter varieties of apples; 600 five years old, balance older.

Two six-room residences, with well of pure spring water at each; three-story fruit house, 66x30, with cold storage; will hold about 12,000 boxes apples; barn, blacksmith shop, bunkhouse and various outbuildings; a first-class private irrigation plant, taking water from lake on the premises, fed by strong, inexhaustible springs, waters entire tract.

Good reasons for selling. If fairly handled the conditions promise a much larger profit, but I will guarantee a profit of 12 per cent on the crop of 1911, or will guarantee the same net income, on like amounts represented, produced by any property I may take in exchange.

Price \$35,000; three-fifths cash, balance time or income-bearing city property.

OWNER, BOX 15, MEYERS FALLS, WASH.

## Hood River Nurseries

Have for the coming season a very complete line of

## NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. Send for prices.

RAWSON & STANTON, Hood River, Oregon

## Do You Want An Orchard In The Willamette Valley?

In order that we may dispose of our few remaining orchards, we offer a special inducement to purchasers in the way of transportation. This special offer, combined with our low prices, easy terms and a contract with many attractive features, makes this a bargain not to be found anywhere else in the fruit growing districts. They will not last long.

Write for descriptive literature and details of this special offer.

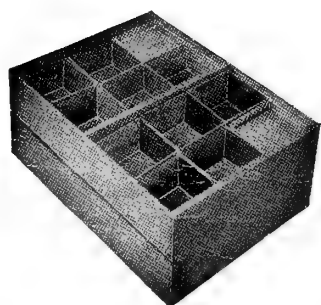
## OREGON APPLE ORCHARDS CO.

Eastern Office, Bloomington, Illinois  
Western Office, 432 Chamber of Commerce, Portland, Oregon



# "NATIONAL" FOLDING BERRY BOXES

ALL STANDARD STYLES AND SIZES WITH CRATES TO MATCH



For Market



For Simplicity

## National Lumber & Box Co.

HOQUIAM, WASHINGTON

Manufacturers of Every Known Style of Fruit Package

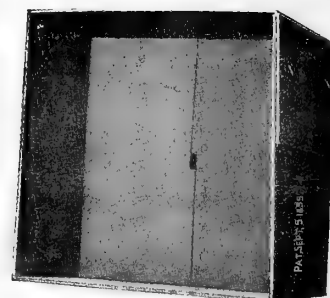
# BEST

OUR AGENTS

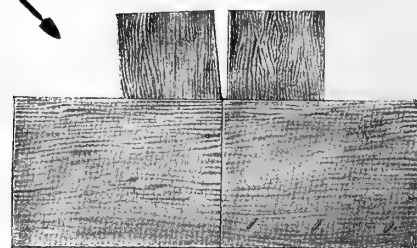
MULTNOMAH LUMBER & BOX CO  
PORTLAND

H. J. SHINN & CO.  
SPOKANE

RYAN, NEWTON & CO.  
SPOKANE



For Filling



For Shipping

## BEST BERRY PACKAGE EVER PRODUCED

price vary according to the percentage of rubber used, and it is, therefore, easy to understand that compounding may not only be required to meet certain conditions and to insure certain results, but may also be rendered necessary in order to produce a given article at a certain price, and at the same time insure the manufacturer a profit at the price; therefore, when the jobber insists that the manufacturer furnish a seven-ply spray hose at a fixed figure, and particularly if that figure is about one-twentieth the price of pure rubber, compounding for price is then more important than compounding for service, and this is the reason why the manufacturer and the jobber of spray hose have failed to furnish the fruit grower with a satisfactory article.

There are four important factors entering into hose construction: First, the inner tube; second, the fabric, or the plies which wrap the tube; third, the cement, or "friction," as it is called by the expert, which cements the plies together; fourth, the cover. The tube is the most important. It, of course, is the conductor and comes directly in contact with the materials handled. The plies are intended to protect the tube from expansion, while the friction, or cement, binds the plies together from tube to cover and serves the dual purpose of first preventing the separation of the plies, and second, in acting as a preservative of the duck or fabric which makes up the body of the hose. The cover is intended to withstand the abrasion and wear from without.

The weight of the duck and the quality of the friction varies according to the service for which the hose is intended, and also the price per foot at which it is sold. The number of plies signifies nothing unless the weight and quality of the material used in these plies is also considered. Generally speaking, the cheaper grades of spray hose are usually of seven-ply construction, but instead of a strong, serviceable duck, the cheapest cheese cloth is used, and one ply of the former we all know is stronger than seven plies of the latter. Do not consider a hose high grade because it has numerous plies, but see for yourself what material these plies are made from, and you will not be deceived. Everyone knows the difference between duck and cheese cloth, and it is easy to cut a small sample from the hose the dealer offers you and thus know this point perfectly.

In just the same manner the purchaser may try the quality of the friction or cement. If it is high grade and consists largely of rubber it will be very difficult to separate the plies, and in separating the friction will adhere to the fabric like gum, whereas the cheap friction will offer little, if any, resistance to pull and scarcely any adhesion to the fabric.

The quality of the tube and cover can be readily determined by testing the strength after you have torn the hose apart, and surely these simple directions should be easy to follow when you are purchasing.

In regard to the tube, little can be determined as to its durability without

subjecting it to an emersion test for, say, a week or so in some of the severe solutions, such as bluestone or distillate. However, if the hose is well made in every other respect it is quite safe to assume that the manufacturer has also been careful to employ a resisting compound in his tube construction. The ordinary cheap seven-ply sheeting fabric spray hose is a make-shift. It kinks easily, the fabric separates, the cover disintegrates under the action of the spray, as also does the tube, which swells and softens if an emulsion spray is used. If run over by a wagon or kinked it quickly goes to pieces. It certainly is a very costly experiment, to say the least.

A hose to give good service should be kinkless, exceedingly elastic, and capable of resisting great pressure. It should have two or three plies of heavy duck fabric, with a sheet of high grade friction (cement) between each ply, so as to insure great resiliency, and a tube compounded to withstand the dissolving action of any of the spray mixtures employed. Such a hose will withstand the most severe service, be unaffected by temperature, develop no weak spots to kink and break, and will be a good insurance against breakdown at critical times to the grower.

The writer has given spray hose construction careful attention and will be very glad to receive suggestions from the growers, as well as to answer their questions. Communicate by addressing in care of the editorial office of "Better Fruit."

# Ogburn's Fruit Gathering Vessels

## THE LATEST INVENTION



EXHIBIT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON  
NOVEMBER 14 TO 19, 1910, WHERE IT TOOK  
FIRST PRIZE AND GOLD MEDAL

**Saves money** by preventing bruising fruit in handling from tree to box. **Saves time** by leaving both hands free to gather with, and being quick to operate. **Money saved is money made.**

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. The canvas bottom slides from underneath the paper and delivers the fruit on your packing table without the slightest injury.

This vessel is an oblong metal pail larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit at all.

The vessel holds one-half bushel or half box of apples, and in emptying the second time the canvas bottom eases the fruit in the vessel on that in the box without bruising or scratching, which is practically impossible with the wood or metal bottom pail.

## A Number of these Vessels Given Free

Every reader of "Better Fruit" should write at once and advise number of vessels he can use in 1911. This information is solicited to secure estimate of how many vessels to manufacture, so your orders can be filled promptly. All fruit growers writing not later than April 1, 1911, will receive special order blank with terms upon which a number of these vessels will be given free. Don't fail to write now.

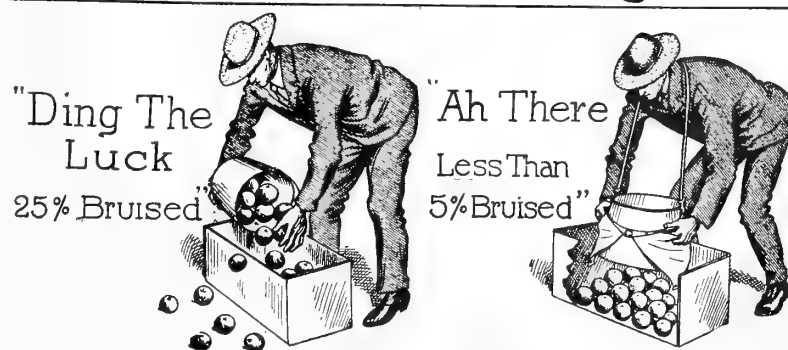
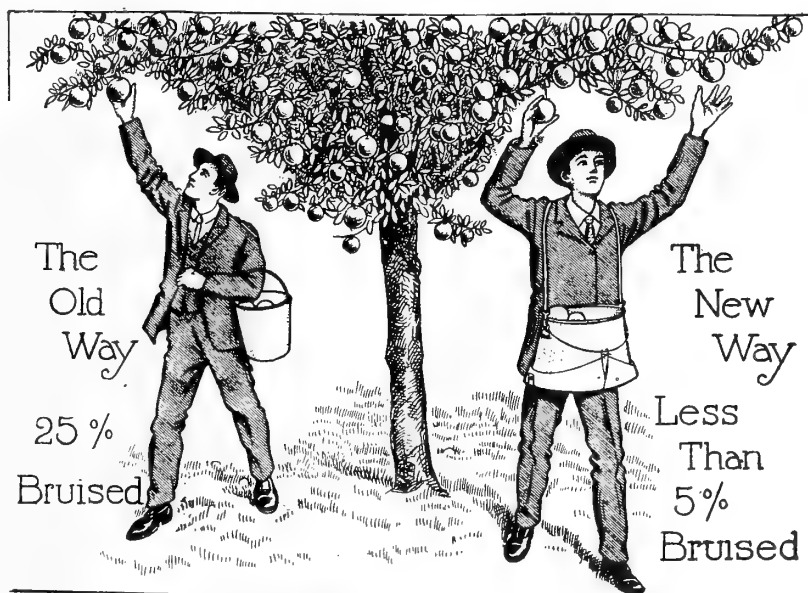
Special terms granted to dealers and agents in their respective trade districts. **Secure your territory for 1911 now.**

ALL GOODS SHIPPED DIRECT FROM FACTORY

Manufactured by  
**WHEELING CORRUGATING CO.**  
Wheeling, West Virginia  
For J. H. OGBURN, Patentee

For territory and terms, address all applications to

**J. H. OGBURN**  
WENATCHEE, WASHINGTON



ILLUSTRATING OPERATION, OLD AND NEW WAY

Reference:  
First National Bank of Chicago

Telephones  
Randolph 3412  
" 3413

## Gibson Fruit Company

(Not Inc.)

WHOLESALE COMMISSION  
SHIPPERS' MARKETING AGENTS  
FRUIT AND PRODUCE

Our own Cold Storage Plant on premises  
Capacity 200 Cars  
Codes: Modern Economy 131 South Water Street  
Revised Economy CHICAGO  
Revised Citrus

# Where will the Apples Go ?

Within ten years—even five years—the yield of apples in the great Northwest will have increased greatly over the present output. Some say 100 per cent—some say more.

Will the consumptive demand show a sufficient increase to take care of the surplus?

If not, what will become of the apples?

Oh, yes, this is theory, but just wait and see if it isn't a matter worthy of serious consideration.

We don't pretend to offer any suggestions beyond the strenuous efforts we have been making to expand the trade in box apples to the maximum. This season we have handled successfully over 1,200 cars, which have been shot to the four points of the compass. That is selling some apples, when you come to think it over—and we want to emphasize the fact that we have put all this vast array of fruit in line for "consumptive channels" with the least possible delay and expense and with quite general satisfaction to growers and buyers as well.

But what of next season, and the next?

We're thinking and planning. It is a matter of serious concern to us, this **SUCCESSFUL** marketing of Western Box Apples, as well as other fruits.

Those interested in getting the most for the present and the best for the future out of their ranches and orchards should not delay writing us about marketing their output the coming season, as well as hereafter.

## Gibson Fruit Company

# You Want the Best? WE HAVE IT IN TREES

They have the highest possible developed root system. It's the root which counts

Mr. Buyer:

No matter what quantity you may require, let us figure with you on your wants for this season, or send for our price list, and if you entrust your order with us we feel certain of retaining you as a permanent customer.

You will get what you order

## Yakima and Columbia River Nursery Co.

North Yakima, Washington

*Growers of*  
Selected Yakima Valley Fruit and Ornamental Nursery Stock  
"NONE BETTER"

Salesmen — A few wanted. Write for terms

# Do you know that

anticipating the future needs of the richest section on earth, we are now offering the most complete stock ever offered in fruit trees, nut trees, ornamental trees and shrubbery, both fruit and ornamental.

We can use at least one energetic, responsible salesman in each of the six most western states.

## Capital City Nursery Company

SALEM, OREGON



C. F. WHALEY  
Originator of the  
Ballygreen System  
of Certified  
Pedigreed Trees

# BALLYGREEN SYSTEM OF PEDIGREE TREES

Selected

Certified

Combines the best practices of horticulture with honest, efficient business methods, insures the fruit grower, making it certain that he will get the kind of trees he orders and a very high quality of fruit when the trees bear.

## BALLYGREEN NURSERIES

HANFORD, WASHINGTON

WRITE US FOR PRICES



H. W. REAUGH  
Graduate  
in Horticulture  
Field Manager  
Ballygreen Nurseries

Continued from page 45

tory. The answer to both questions depends not only upon the variety of fruit to be sprayed, but also upon the conditions prevailing in the orchard to be sprayed and the relative importance of the orchard crop to other crops. The orchardist can afford to do more spraying than can the farmer, but usually can obtain satisfactory results with fewer applications—first, because he is usually better equipped for the work and has a better knowledge of why he sprays; and, second, because his orchard is usually less seriously infested owing to the better care it has received.

An almost universal practice in this state—and a good one—is to spray the orchard, whatever the kind of fruit, with lime-sulphur at some time while the trees are dormant. While this application is made primarily for San Jose scale, I believe there is no other which has such a generally beneficial result. It is the annual "house-cleaning" of the orchards.

The best time for this winter spraying is immediately after the leaves drop in fall—even before they are all off—or just before the buds open in the spring. Personally I should prefer the latter were the orchard seriously infested with San Jose scale; the former were it badly infested with anthracnose.

All other sprayings are for special purposes, and can best be considered in connection with particular pests.

Apple Scab—Spray with lime-sulphur (1-30); first, when the blossoms are beginning to unfold; second, immediately after the blossoms fall; third, ten days or two weeks later. (If the trees were sprayed with winter strength lime-

sulphur solution immediately before the buds started the first of the above applications may be omitted. If prolonged rainy weather follows the third spraying, a fourth, two weeks later, may be profitable).

Codling Moth—Add arsenate of lead to the second scab spray. Endeavor at this time, by the most thorough work, to fill the blossom end of every apple with the spray. If this be well done, and if the fruit be again thoroughly sprayed late in June, fairly good results may be obtained without further applications. It is our experience, however, that in the Willamette Valley at least it usually pays to spray once or twice for the second brood. The first of these applications should be about August 1, the second some three or four weeks later. While thorough work should be done at all times, particular emphasis should be placed upon the two first sprayings. If all of the first brood larvae could be killed there would be none of the second.

San Jose Scale—Spray in winter with lime-sulphur immediately after the leaves fall or before the buds start in the spring. Do thorough work. Soak every part of the tree.

Aphids or Plant Lice (woolly-aphis, green-aphis, brown-aphis, black-aphis)—The plant-lice rarely, if ever, become troublesome in orchards which receive an annual winter spraying with lime-sulphur. Dilute kerosene emulsion or Black-Leaf Sheep Dip, applied just after the leaf buds start or at any time the aphids become troublesome and before the leaves curl, is also effective.

Apple Tingis—Practice clean culture; clean up and burn all rubbish about the orchard. Spray when eggs are hatching, in late May or early June, with kerosene emulsion or Black Leaf Sheep Dip.

Apple Tree Anthracnose—Spray with bordeaux or lime-sulphur soon after fall rains begin, or at least as soon as fruit is picked. Spray again with lime-sulphur as soon as leaves have fallen.

Barley—To prevent smut use 24.

Beans—For weevil fumigate the seed with 13.

Beet—See under sugar beet.

Blackberry—For anthracnose, leaf-spot and rust spray with 15 before leaves start; when leaves are half-grown use 16; repeat in two weeks.

Cabbage and Cauliflower—For club-root rotate crop; destroy all stumps and other waste in fall; apply lime at rate of 80 to 100 bushels per acre and work into soil. For worms use 1 to 3 when first observed. After plants head 6 to 12 may be used if preferred. For aphids use 11.

Carnations—For rust and other fungus diseases spray with 22 when disease first appears, and repeat at intervals of two weeks. Give good culture, avoid wetting leaves. For red-spider or aphids use 11 or 25.

Cherry—For brown-rot and leaf-spot spray with 16 or 25 when blossoms are opening and again when petals fall; after fruit begins to color use 25, 19 or 21. For slugs use 2 when slugs first appear, or if fruit is ripening dust with air-slaked lime or fine dry dust. For aphids use 11. For gummosis cut out gum pockets and wash or spray with 15. For San Jose scale use 25 when trees are dormant.

Cucumber—For the striped cucumber-beetle dust the plants with 3, or spray with 16 plus 1. Plant some early squash as trap plants, and when the beetles are feeding on them dust them with pure paris green. For fungus diseases spray with 16 when vines begin to form and repeat three or four times at intervals of two weeks.

Currant—For mildew spray with 25 when buds begin to open and repeat at intervals of ten to fifteen days until fruit is nearly ripe. For worms on leaves use 2 or 6. For fruit worms destroy infested fruit; allow the poultry the run of the bushes when infested fruit is falling.

Gooseberry—Same as currant.

Grape—For mildews dust with sulphur or spray with 25. For rot and anthrac-

## TREES in Quantity, Price and Quality

Growers and importers of a full line of all nursery stocks—apples, pears, prunes, cherries, peaches, etc. Large or small orders—we fill all. Just drop us a few lines giving your list of wants, and receive offers which we know will interest you. Have always given satisfaction and can do so now.

*We want to get in touch with planters.*

**CARLTON NURSERY CO.**

Carlton, Oregon

## Paste for Labeling

**"PALO ALTO" PASTE POWDER**

added to cold water, instantly makes a beautiful smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss, No spoiled paste.

**Paste Specialists**

**Robinson Chemical Works**

**349-351 Eighth Street  
San Francisco, California**



# A WARNING!!

"Probably the most important lesson that the orchardists of the Northwest have yet to learn is that cheap nursery trees are an exceedingly dangerous foundation on which to start an orchard—that a few cents economy on such trees at the start is many many dollars' loss in the long run."

Thus spoke one of America's greatest horticulturists on a recent visit to the Northwest. It is a warning that is well merited, for one can visit scarcely any of the newer fruit sections without being appalled by the number of weak, sickly, undersized young trees that stand as incontrovertible proof of his warning.

Any man who will plant anything but the strongest, most vigorous, healthiest trees—of **known** ancestry—trees whose breeding for generations past insure prolific bearing and disease resisting qualities is bequeathing a legacy of trouble to posterity. The first cost of a fruit tree is an insignificant cost, but the quality and pedigree of that tree is a powerful, **perpetual** factor to your success and those after you.

All of the nursery trees—apple stocks—of the **Hood River Standard Nursery Co.** have **three-year-old** root systems, with one-year straight tops—big, strong, healthy, vigorous trees that **will grow** when properly planted, and which will bear from one to three years earlier than the so-called "yearling" tree so promiscuously peddled about, and they will cost you little, if any, more. They are all propagated from the highest earning and best trees of the world famous **Hood River Valley**—trees whose ancestry and past performance is a matter of careful record. They are in every sense a **thoroughbred**, pedigreed apple tree.

For the season of 1910-11 we can offer a limited amount of extra size apple only. Write for catalog and price list.

## HOOD RIVER STANDARD NURSERY CO.

HOOD RIVER, OREGON

nose spray with 22 or 25 when buds are swelling, when leaves are half-grown, just before blossoming, when fruit has set and repeat once or twice at intervals of two weeks. If later applications are required use 19.

Hop—For hop-lice spray thoroughly with 7 in June, and repeat if necessary.

Household Pests—For fleas, flies, mosquitoes, roaches, etc., use 12. Garments infested with clothes moths may be inclosed in tight box and fumigated with 13. If house is badly infested with any insect fumigate with 13.

Muskmelon—For striped cucumber-beetle see under cucumber.

Nursery Stock—For various fungus diseases spray with 16 when leaves first appear and repeat at intervals of ten to fifteen days until rainy season closes. Fumigate with 14.

Oats—For loose smut soak seed in 24.

Onions—For smut practice rotation of crops; transplanting seedlings; use 100 pounds of sulphur and 50 pounds of air-slaked lime per acre in the drills with the seed. For downy-mildew try 16 when disease first appears and repeat if necessary. For cut-worms use 4.

Pea—For mildew spray with 25 when mildew appears and repeat once or twice if necessary at intervals of ten days.

Peach—For leaf-curl spray just as buds are swelling with 16 or 25. For blight and fruit-spot spray with 17 or 25 soon after fall rains begin. If brown-rot is severe follow with one or two applications of 21 while fruit is coloring. For San Jose scale apply 25 while trees

are dormant. For twig-borer use 25 just before buds swell. For root-borers, as a preventive, wrap base of trunks with paper or cloth, or paint them with poisoned whitewash; to kill borers dig them out in fall and spring, or use 13.

Pear—For scab, codling moth and San Jose scale see under apple. For slug see under cherry. For pear blight cut out and burn all diseased branches. Make cut several inches below where disease extends and sterilize tools frequently by dipping in 23. Paint cut surfaces with 15, strong.

Plum and Prune—For twig-borers and root-borers see under peach. For leaf-curl give good drainage, good cultivation and grow leguminous cover crops in winter. For brown-rot see under cherry. For San Jose scale see under apple.

Potato—For scab soak seed potatoes in 23 or 24. For potato dry-rot rotate crop. For blight spray with 16 or 25 when plants are six inches high and repeat two or three times at intervals of two weeks. For flea-beetles spray with one of the food poisons, 1 or 2 in 25, whenever they appear. For wet-rot plant only sound seed, practice rotation of crops, destroy blighted plants as fast as they appear and spray to prevent the flea-beetle punctures.

Quince—For leaf and fruit-spot spray with 16 or 25 when blossom buds begin to open, again when fruit has set and repeat at intervals of two weeks until rainy season is over.

Raspberry—See under blackberry.

Rose—For mildew dust sulphur or spray with 25 whenever it appears. For leaf-spot spray with 16 or 25 when spots first appear and repeat as necessary. For aphid use 11, or wash them off with a stream of water from the garden hose. For rust, burn fallen leaves in fall; spray with 25 before buds start in spring and repeat the application at intervals of ten or fifteen days.

Strawberry—For crown-miner and the root-borer destroy infested plants before May 1. For leaf-roller burn tops as soon as possible after crop is gathered. For leaf-blight spray with 16 or 25 when new leaves start and repeat every ten or fifteen days until blooms appear. Mow and burn tops as for leaf-roller.

Sugar Beets—For leaf-spots or flea-beetles spray with 25 plus 2 when spots or beetles first appear and repeat two or three times at intervals of two weeks. For cut-worms, if bad, use 5. For aphid use 11.

Tomato—For flea-beetles spray with 16 plus 2 when they appear, or hang papers from a string stretched just over the plants. For blight use barnyard compost, plenty of water, close planting and stocky, vigorous plants.

Violet—For blight use 16 or 25 when it first appears; repeat once or twice at intervals of ten or fifteen days if necessary.

Watermelon—See muskmelon.

Wheat—For smut soak seed in 30. For Hessian fly practice late seeding. For insects in stored grain use 13.

## SULPHUR SPRAYS FOR BLISTER MITE EFFECTIVE

Summarized by T. H. HALL, from Bulletin by P. J. PARROTT, N. Y. Experiment Station, Geneva, N. Y.

FIVE years ago the blister mite was almost unknown to apple growers of Western New York. Today it is second only to San Jose scale as a topic for discussion where orchardists meet. The damage caused by this pest has undoubtedly been overestimated in some cases; the danger from it is not to be compared with that from scale, but the peculiar spotting of the leaves and their unhealthy yellow appearance cannot fail to attract attention in any affected orchard. Premature dropping of the leaves must diminish the vigor of the tree and lessen its productiveness the second season, if not the first, and the reduction in size of the fruits and their distortion when directly attacked by the mites are very evident damages. The mite has spread rapidly in the past three years and is now quite common in orchards generally throughout the principal apple-growing counties of Western New York. It is impossible to estimate closely the damage done by

the mite, since injuries from other causes like poor drainage, insect attacks, unfavorable weather and spraying mixtures are mistaken for work of the mite or combined with it. Many careful fruit men, however, believe that their orchards have been, or are liable to be, so much injured by the pest that they must adopt some repressive measures against it. In Bulletin No. 283 the effectiveness of oil emulsions, miscible oils and sulphur washes against the mites was clearly shown. The present bulletin is to emphasize the merits of the sulphur wash, in particular, for this purpose, and to confirm the belief that spraying is desirable, practicable, cheap and effective as a means of control of the mites.

Four orchards were treated in the planned experiments, one of which was owned by the station and three by others who co-operated in the tests. Experiments were also made, not under station direction, by owners of eleven other orchards. These volunteer experiments are especially valuable as showing the practicability of treatment for the mites. Each of these orchards was quite seriously infested before treatment and in each case the result was such decided lessening in numbers of the mites that the injury to foliage or fruit was reduced to a minimum.

In the station orchard comparison was made between sulphur washes (both home-made and commercial preparations), miscible oil and kerosene emulsion. These tests were made both on parallel plats through the orchard and on parts of individual trees treated by thirds, fourths or fifths, as necessary to accommodate the mixtures compared, reserving a check section on each tree. Fall and spring spraying were also tested side by side.

In none of the other orchards was the treatment so varied, but in twelve of the fifteen the lime-sulphur wash was given a good test with excellent results; in the other three, miscible oils or kerosene emulsion were used. In most of these orchards unsprayed areas or trees were left, and on these or on the orchards of neighbors the work of the mites was much more noticeable than on sprayed sections. On treated trees, as a rule, only scattered leaves showed spotting, the main body of the foliage was green and vigorous, and in some cases the leaves were apparently larger than those on unsprayed trees. Pimpling and distortion of the fruit were almost wholly prevented. The spraying often improved the foliage to such a degree that the contrast between treated and check areas was plain, even at considerable distances from the orchards.

In some cases where comparisons were made, particularly in the station orchard, little difference in effectiveness was to be detected between the different sprays. Marked differences were found, of course, in the effect in the various orchards; but these variations were usually due to the diverse standards of spraying held by those who made the applications. In one case only about one and one-half gallons

of wash was applied to a tree, in others five, while in most cases seven or eight were thought necessary for good treatment, and in one case ten gallons was used. Even with the minimum applications decided reduction of the mites was secured.

A new feature in these tests was the use of concentrated sulphur washes, both commercial and home-made. These compared favorably with the ordinary boiled washes, and they possess some merits which recommend them. The home-made concentrated wash, in particular, should be widely tested by orchardists for the mites. Its advantages are two: It may be prepared in concentrated solutions to be diluted as needed, and it has no coarse sediment to clog the nozzles and to cause the rapid wearing out of the packing, lining and other parts of the pump. This mixture and the commercial preparations now enable many of our fruit growers to use a sulphur wash, who for the reasons given have refrained from using this spray as prepared by the old method.

The formula for boiled lime-sulphur follows: Lump lime, 20 pounds; sulphur, 15 pounds; water, 50 gallons. Place the lime and sulphur in the cooking receptacle containing about fifteen to twenty gallons of water. Stir the mixture frequently and boil for one hour. Add water to make the required amount of wash and strain through a fine brass-wire strainer into the spraying tank. Applications should be made while the wash is warm.

Home-made concentrated lime-sulphur wash: Lump lime, 60 pounds; sulphur, 125 pounds; water, 50 gallons. Slake the lime in the cooking receptacle and stir in the sulphur, which has been made into a thin paste with water. Add enough water to make about forty-five gallons of the mixture, which should be boiled for one or more hours. After the cooking is completed allow the wash to stand until the sediment has settled to the bottom, when the clear, brownish liquid should be drawn off. To this add water, if needed, to make the required fifty gallons of concentrated solution.

For use, dilute the concentrated sulphur solution at the rate of five gallons of the liquid to forty-five gallons of water. To every barrel of fifty gallons capacity of the diluted spray add from ten to fifteen pounds of lime, made into a paste. The addition of the lime is not necessary, but by its use the trees are given a whitewashed appearance, which enables the farmer to judge better of the thoroughness of his spraying. This mix-

### Greider's Fine Catalog

of pure bred poultry, for 1911, over 200 pages, 57 large colored pictures of fowls. Calendar for each month. Illustrations, descriptions, photos, incubators, brooders, information and all details concerning the business, where and how to buy fine poultry eggs for hatching, supplies, etc., at the lowest cost, in fact, the greatest poultry catalog ever published. Send 15c for this handsome book.

B. GREIDER, Box 72, Rheems, Pa.



## HEMINGWAY'S

Is the lead arsenate of the expert fruit grower. It is widely used in all of the famous fruit growing districts. Made in a factory which has specialized in arsenical manufactures for over 30 years, it has the advantage of this long experience in its preparation for the use of the discriminating fruit grower.

## Hemingway's Arsenate of Lead

### THE PERFECT PRODUCT

Possesses miscibility with maximum sticking power. Is 20% stronger than the federal law requires.

Send for booklet giving full directions for the use of Hemingway's Lead Arsenate against all biting insects.

KERR, GIFFORD & CO., Portland, Ore.  
Coast Agents, who carry full stocks

HEMINGWAY'S LONDON PURPLE CO.  
LTD.

64-66 Water St., New York

## SEED CATALOG

READY TO MAIL

The leading Seed Catalog of the West—Lilly's Catalog. Your 1911 crop depends on GOOD seed—send for this Catalog and get the best. Write now to the CHAS. H. LILLY CO., Seattle, Wn.

# LILLY'S



## ORCHARDIST SUPPLY HOUSE

FRANZ  
HARDWARE CO.

Hood River, Oregon

ture may be used immediately after cooking, or may be barreled, to be drawn on as occasion requires. A greater dilution than that recommended may perhaps be employed in spraying for the mite. To avoid the loss of sulphur, the sediment that remains after drawing off the concentrated solution should be boiled over again with fresh lime and water, and the liquid used to start fresh preparations or for purposes of dilution.

During recent years a number of commercial lime-sulphur preparations have appeared on the market. Two of the most widely advertised have been quite extensively tested in the various station experiments with the blister mite, and at the strength employed, one part to nine parts of water, have proven very efficient remedies. A number of volunteer experimenters have reported equally satisfactory results. Fruit growers who have heretofore refrained from using the lime-sulphur wash for the mite because of the trouble of making and the expense of a suitable cooking outfit, may now use one of the commercial brands. Usually some lime paste should be added to these preparations, as without it it is difficult to tell how thoroughly the applications have been made.

Applications of the lime-sulphur wash may be made in the fall after the majority of leaves have fallen, or in the spring until the buds commence to break and to show the tips of the young leaves. The treatment should not be made later than this, as the sulphur sprays are destructive to the tender foliage and the mites may have gained entrance into the leaves, where they would be beyond the reach of the mixtures. If it is desired to treat the trees in the spring, the usual spraying at this time with the bordeaux mixture is unnecessary. By following this plan the work of spraying for the mite is

greatly simplified, and for this reason it is generally preferred by orchardists. Liberal quantities of the sulphur wash

should be applied and the trees after treatment should have the appearance of being completely whitewashed.

**BOOKS** we have read, own and recommend, which can be ordered of your local stationer, or direct. The initials after the name represent the publishers, whose addresses are found at the end of the list. These books can be ordered of the J. K. Gill Company, Portland, Oregon.

Fruits and Fruit Trees of America— Downing	W	\$4.50
California Fruits—Wickson	P	2.50
Success with Small Fruits—Roe	DM	.75
American Fruit Culturist—Thomas	WV	2.50
Strawberry Culturist—Fuller	J	.50
The Principles of Fruit Growing—Bailey	M	1.25
Bush Fruits—Card	M	1.50
Horticulturists' Rule Book—Bailey	M	.75
The Nursery Book—Bailey	M	1.00
Pruning Book—Bailey	M	1.50
Cyclopedia of Horticulture—Bailey	D	30.00
Nut Culturist—Fuller	J	.75
Insects Injurious to Fruits—Saunders	L	2.00
Fungi and Fungicides—Weed	J	1.00
Insects and Insecticides—Weed	J	1.50
Spraying Crops—Weed	J	.50
Spraying of Plants—Lodeman	M	1.00
Talks on Manure—Harris	J	1.50
Farming with Green Manures—Harlan	F	1.00
Fertilizers—Voorhees	M	1.00
Irrigation Farming—Wilcox	J	2.00
Irrigation for Farm, Garden and Orchard— Stewart	J	1.50
Irrigation and Drainage—King	M	1.50
Gardening for Profit—Henderson	J	1.50
New Onion Culture—Greiner	J	.50

New Rhubarb Culture—Morse	J	.50
Asparagus—Hexamer	J	.50
Vegetable Gardening—Green	WP	1.25
A B C of Potato Culture—Terry	R	.45
Tomato Culture—Root	R	.35
Melons—Burpee	B	.20
The Vegetable Garden—Vilmorin	D	4.50
The Forcing Book—Bailey	M	1.00
Garden Making—Bailey	M	1.00
Practical Garden Book—Nunn & Bailey	M	1.00
Hedges and Windbreaks—Powell	J	.50
The Soil—King	M	.75
Fertility of the Land—Roberts	M	1.25
The Farmstead—Roberts	M	...
Rural Wealth and Welfare—Fairchild	M	...
Farm Poultry—Watson	M	1.25
How the Farm Pays—Crosier & H.	H	2.00
The First Book of Farming—Goodrich	D	1.00
Cyclopedia of Agriculture	J	4.50
The Principles of Agriculture—Bailey	M	1.25
Roses and How to Grow Them— Sibson & Holman	G	.50

## ABBREVIATIONS

Pacific Press Pub. Co., San Francisco, Cal.	P
Orange Judd Co., New York	J
Webb Publishing Co., St. Paul, Minn.	WP
A. C. Root Co., Medina, Ohio	R
W. Atlee Burpee, Philadelphia	B
J. H. Gregory, Marblehead, Mass.	G
Doubleday, Page & Co., New York	D
A. T. Ferris, Shea	F
John Wiley & Sons, New York	W
W. W. Wood & Co.	WW
J. K. Gill & Co., Portland	G
J. B. Lippincott & Co., Philadelphia	L
MacMillan Co., New York	M
P. Henderson & Co., New York	H

## BETTER TREES MEANS BETTER FRUIT

Nursery stock grown under careful supervision means

## GREAT ADVANTAGES TO THE PLANTER

Twenty years of practical experience in the orchard, as well as the nursery business, means that we know how to grow trees that will give results. Henry Holterman, of Creswell, Oregon, says of our stock: "Of the 1,800 apple trees purchased of you last spring, we did not lose one tree. The orchard is the best, for the time being planted, of anything in this vicinity. Sold for \$300 per acre in less than six months after being planted."

Let us figure on your want list. Our prices are right. A special discount on cherry trees for a limited time—15 to 20 per cent, according to grade and quantity.

## LAFAYETTE NURSERY CO.

Mention "Better Fruit"

LAFAYETTE, OREGON

**SPRAY** COMPLYING WITH THE INSECTICIDE ACT OF 1910  
IT WILL PAY YOU TO USE EITHER

**ARSENATE OF LEAD**  
PASTE OR POWDERED  
FOR ALL LEAF EATING INSECTS.  
RESPONSIBLE DISTRIBUTORS AND AGENTS WANTED

**KEY BRAND**  
RIGHT PRICE AND MATERIAL  
FUNGICIDE AND INSECTICIDE  
USE

**BORDO LEAD**

**INTERSTATE CHEMICAL CO.**  
11 BAYVIEW AVE., JERSEY CITY, N.J.  
WRITE FOR PRICES, CIRCULARS ETC. CORRESPONDENCE SOLICITED.

**BALFOUR, GUTHRIE & CO.**  
Distributors for Oregon

**RHODES DOUBLE CUT PRUNING SHEAR**

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. We pay Express charges on all orders. Write for circular and prices.

Pat'd June 2, 1903.

Dept. W  
RHODES MFG. CO.,  
GRAND RAPIDS, MICH.

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

Will have for fall delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDE, Nurseryman

H. S. BUTTERFIELD, President

## Virginia Fruit Property

8000 TREES 303 ACRES OF LAND

Located 3½ miles from railroad station, in Albemarle County; telephone, mail delivered daily; 5,000 peach trees (mostly Elbertas) and 3,000 apple trees; age of trees, from 2 to 4 years. The owner received \$2,500 from the fruit crop last year, and there are only 500 trees in full bearing; additional cleared land enough to plant out 10,000 more trees; fair 7-room house. This is one of the best fruit sections of the state, and the peaches from this orchard brought 25c more per crate on the Northern markets than any other orchard in the entire community. On terms given below, the fruit crop will in four years more than pay for the property. Price \$11,000; terms \$2,500 cash, balance on five years' time. Write us at once.

**VENABLE & FORD**

LYNCHBURG, VIRGINIA

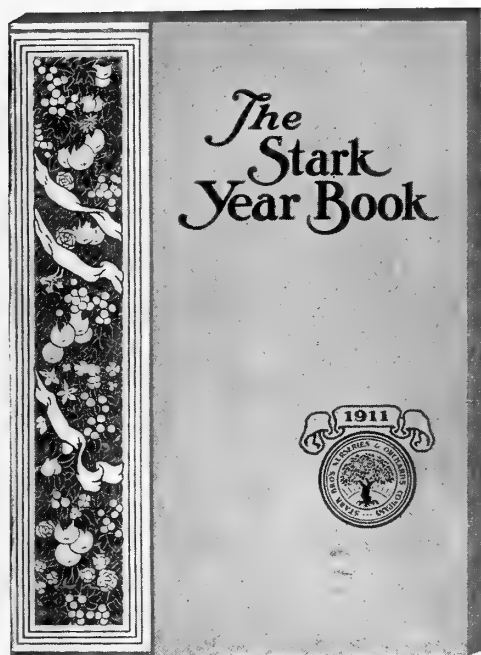
EVERY PLANTER SHOULD HAVE OUR

**SEED CATALOG** FOR 1911

IT TELLS ALL ABOUT SEEDS, BULBS POULTRY AND BEE SUPPLIES

Write Today. If You Mention Name of This Paper You Get a Packet of Our Choice SEEDS FREE

**THE BARTELDES SEED CO., DENVER, COLO.**



# A Book that is different

**THE STARK YEAR BOOK**  
IS UNLIKE OTHER NURSERY LITERATURE

**S**INCE THE STARK YEAR BOOK for 1911 (Volume II) was first announced in these pages the pressure of matter has increased the size from 100 to 120 pages; the number of full page illustrations in natural colors has been increased from 23 to 31, a showing of 165 varieties of fruit and flowers instead of 113. The color work is now most comprehensive, carrying apple, crabapple, quince, pear, peach, apricot, cherry, plum, grape, currant, blackberry, gooseberry, mulberry, dewberry, clematis and roses.

These additions to The Stark Year Book have quite naturally delayed its date of issue a trifle—from January 15th to February 1st—but its readers will be well repaid for the slight delay. More than ever, The Year Book becomes a complete volume of the most helpful and practical guidance to the orchardist and fruit grower.

Two special features of The Stark Year Book deserve special mention. Where practicable, we have appended to our own descriptions, made from first-hand experience and close observation, the experience and observation of many other horticulturists. We have thus hoped to give to them that degree of definiteness and accuracy which is possible only when a description stands side by side with the weightiest possible evidence in support thereof.

We have also tried earnestly to meet many another practical difficulty of the beginner as well as of the more experienced—in a word, afford him the opportunity of getting what will be the best of all aids to success—a condensed knowledge of the whole subject.

If you have not already sent for your copy of The Stark Year Book for 1911 do so at once—fill in and send us the coupon today. Postage 10 cents. The demand for Volume II is tremendous; the edition is limited, and probably will not be reprinted when exhausted.

## **Stark Bro's Nurseries & Orchards Co.**

Louisiana, Missouri

BF 2-11

**Stark Bro's Nurseries & Orchards Co.**

Louisiana, Missouri, U. S. A.

Gentlemen—Kindly forward me Volume II of The Stark Year Book, for which I enclose 10 cents in stamps to pay postage.

Name .....

Postoffice .....

County....., State.....

I expect to plant.....trees about.....  
(Number) (Fill in date)

The planting will be done at.....  
(Give location, both town and state)



**"NEW OREGON" STRAWBERRY**

THE "New Oregon" strawberry, aside from being a meritorious Oregon production by an Oregon man, is worthy of attention judged solely on its merits as a commercial and garden variety, and its brief history should prove of interest to growers. Conflicting reports as to its origin have a tendency to confuse and obscure the real facts, but on two points we can be quite sure: First, the identity of the man who grew it, and second, how it came to be christened the "Oregon." The berry was first produced by Mr. W. D. Hufstetter, near Salem, Oregon, about 1900, and was known as the "Hufstetter Seedling" until the year 1902, when a sample box was taken to the Oregonian office in Portland, where the suggestion was made to discard the name of Hufstetter Seedling and call the berry the "Oregon." Mr. Hufstetter acted on this suggestion at once and thereafter the berry was known as the "New Oregon." The following clipping from the Weekly Oregonian of June 13, 1902, gives a brief account of this incident:

"W. D. Hufstetter brought to the Oregonian office yesterday a box of a new variety of strawberries, which he has christened 'The Oregon.' They are a cross of the Sharpless and the Jessie, and for size and flavor cannot be beaten. He has less than a quarter of an acre in strawberries and there are now on the vines, which were planted the latter part of March, probably as much as fifteen gallons of berries. 'The Oregon' is a good canning berry and its advent in the markets of the city is regarded with interest by growers and consumers."

From the foregoing it would seem that the berry was a hybrid artificially crossed, and as such it was purchased and introduced by the Portland Seed Company in the fall of 1902, meeting with instant favor, and the demand for plants has increased to almost a popular clamor.

The productiveness, beauty and quality of the berry coming to the attention of "Better Fruit," inquiry as to its origin was referred to the writer. His investigation to confirm the above developed an entirely different story from apparently authentic sources, to the effect that two plants were found growing near a row of Magoons in a field where other varieties were growing, and from these plants Mr. Hufstetter grew the New Oregon. Neighbors of Mr. Hufstetter are quite sure that this was the start and the plants were either natural hybrids or sports. Mr. Hufstetter having died some years ago, we cannot confirm this report, and can only review the data at hand, leaving the reader to draw his own conclusions as to the origin of the New Oregon, after observing its physical characteristics and habits of growth.

The New Oregon is a staminate or perfect berry, and the illustration on the front cover, reproduced from a photograph, shows the typical form of the fruit, though the color can hardly be considered as deep as it should be when ready for picking. This is best described by an enthusiastic grower, Mr. Finnigan of Oregon City, as being the "color of fresh liver"—a rich, deep red with such brilliancy as to give the berry a varnished appearance. When fully ripe the color is darker than any other berry we have known and extends clear through to the very center, and no matter how large the berry

the New Oregon is never hollow. The seeds are a bright yellow and set in to where their tops are just flush with the surface of the berry. The foliage is luxuriant, being healthy and vigorous, but the plant has a marked characteristic of setting few runners.

With true stock and proper culture the first pickings are generally made in the first half of May in this section, and the berries are very large, shapely and uniform, being borne through a long season, holding up their size and quality to the last. When fully ripened the flavor is distinctive, the berry crisp and delicious, remaining on the vine for as long as three days without injury, keeping perfectly for several days after picking; stands handling and long shipment, and will hold its shape and color when canned. In some locations they are almost ever-bearing. Mr. H. L. Stevens, a reliable grower of Coquille, Oregon, writes: "Since May 10 we have never been out of New Oregon, and on the first of August from four rows 100 feet long we picked seven gallons of choice berries. At this date, August 3, the plants are in full bloom."

An interesting and severe test has been under way for six years by Mr. Finnigan, an expert grower near Oregon City. He originally started with six plants, secured from the Portland Seed Company when first introduced, and from this start has grown the special pack of "Finnigan's Fancy Strawberries," sold under a sealed label in the Portland market and never for less than three dollars per crate. During this time Mr. Finnigan has grown every promising sort he could obtain from all sections, but has as yet been unable to find a variety that can take the place of the New Oregon for his fancy pack. He reports growing 16,878 boxes from two acres in one season.

A grower in Cuddeback, California, writes that his "New Oregon strawberries were such a success that they stirred up his whole neighborhood and he was overrun for plants." Reports from Washington and Idaho all speak in the highest terms of the New Oregon.

There is a general tendency to pick this berry when it first colors, before it is fully ripe. This is a mistake, as it really keeps better in its ripened state. When selecting plants, choose good ones, end runners only, of sturdy growth and with heavy roots. Be sure they are true to name and have been grown for planting purposes. They may cost a trifle more, but this trifle often makes the difference between success and failure.

THE IDEAL IRRIGATION ROTARY PUMP Company has just installed a pumping plant for the Schonquest Orchard in Hood River, the work being in charge of their special representative, Mr. F. L. Knapp. The Ideal people claim that their pump has the highest efficiency and that the expense of irrigating is reduced to a minimum cost where water has to be raised from a creek or above the irrigation ditch or to any higher level. With this pump water can be raised at an economical price to an elevation of 250 feet. The cost of the pump varies, according to the size, all the way from \$35 to \$1,000. It is stated that the \$1,000 pump will pump 10,000 gallons of water per minute 250 feet at a less price than the same quantity of water can be raised at the same speed by any other pump. The pump is being generally introduced throughout the irrigated districts of the Northwest and seems to be meeting with success, as it was generally introduced last year for the first time, and 180 of the pumps have been placed in operation, all of which are giving excellent satisfaction.\*

## Columbia and Okanogan Nursery Company

Wenatchee, Washington

PROPAGATORS AND GROWERS OF

The Cleanest, Thriftiest, Best Rooted Nursery Stock in the  
**WORLD**

WHOLESALE AND RETAIL

SEND US YOUR ORDER

Supplying Large Commercial Orchards a Specialty

## QUAKER NURSERIES

We have a large stock of YELLOW NEWTOWN PIPPINS, SPITZENBERGS, JONATHANS, WAGENERS, ROME BEAUTIES, and all of the leading varieties of apples.

We also carry a heavy line of BARTLETT, COMICE AND BEURRE D'ANJOU PEARS.

A general stock of peaches, such as EARLY CRAWFORDS, ELBERTAS, LATE CRAWFORDS, FOSTERS, TUSCAN CLINGS, PHILLIPS, MUIR, EARLY COLUMBIA, Etc.

Small fruits in great abundance, STRAWBERRIES, BLACKBERRIES, RASPBERRIES, DEWBERRIES, GOOSEBERRIES, CURRANTS, GRAPES.

H. B. PATTERSON, MEDFORD, OREGON,  
Special Selling Agent for Southern Oregon.

C. F. LANSING, Salem, Oregon

## NURSERY CATALOG

New, handsome, instructive, up-to-date, describing

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

Free on request. Write now, mentioning this paper.

J. B. PILKINGTON, Nurseryman, Portland, Oregon

Faculty Stronger Than Ever  
More Progressive Than Ever

Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

**Behnke-Walker** Business College

PORTLAND, OREGON

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

# TREES

All Varieties

TRUE TO NAME. BUY THE BEST

BURBANK'S NEW STANDARD PRUNE

We call special attention to this new prune, a cross between the Tragedy and Sugar Prune. Best for drying and shipping. Every grower should include it in his order.

BURBANK'S NEW PATAGONIA STRAWBERRY, the strongest grower, most productive and delicious ever produced.

California Horticulture, the Fruit Growers' Guide, 120 pages, profusely illustrated, 25 cents postpaid.

ANNUAL PRICE CATALOGUE FREE

New illustrated price list containing brief description of all stock carried by us will be mailed free if you refer to this ad.

Fancher Creek Nurseries, Inc.

Geo. C. Roeding, President and Manager

P. O. Box 10 Fresno, California

# The HARDIE TRIPLEX



Is built by specialists in Spray Pump manufacturing. Years of "knowing how" and a good factory insures you a sprayer that gives you the pressure and capacity you need, and one that anybody can run successfully all the time.

A cab with curtains covers and protects your machine from weather and spray.

On account of its light weight, your team can haul it anywhere, and its low construction allows you to operate in closely set orchards without damage to fruit or trees.

Our rotary propeller agitator insures you a uniform spraying mixture at all times, and this, with the even high pressure given by our Triplex Pump, gives you the highest yield of perfect fruit.

Yourself and the few tools we send with each machine constitute all the machinists and experts needed for successful operation.

Efficiency, lightness of weight, ease of operation and low cost of upkeep leave in the Hardie Triplex

## *Nothing to Watch but the Spray*

Write today for our 56-page catalog, giving details of construction of our different sizes of power machines, hand pumps, etc.

## The Hardie Manufacturing Company

Hudson, Michigan

49 Front Street, Portland, Oregon

# INJURY CAUSED BY THE APPLE POWDERY MILDEW

BY W. H. VOLCK, WATSONVILLE CALIFORNIA (Continued from February Number)

We have frequently observed that when arsenical spraying is done early in the season (shortly after the blossoms have fallen) the foliage may become an especially dark green color and new growth develop with more than ordinary vigor. The effect is apparently due to arsenic stimulation, and where it is pronounced the trees outgrow the mildew for a time. Frequently this stimulation terminates in poisoning, and the mildew may then obtain a stronger hold than ever. Stimulation with partial subjugation of the mildew has been observed, and after spraying with zinc arsenite, arsenite of lime and arsenate of lead.

The above mentioned compounds and mixtures by no means exhausts the list of those that might be tried, and possibly would prove specifics against the mildew. The results obtained in these experiments, however, would indicate that the ultimate discovery of a substance that, when applied as a spray, will kill the mildew upon the stems is very improbable. So far purely curative treatments have proved very unpromising, as all substances powerful enough to kill the well established fungus were injurious to the plant.

Those substances which partly subjected the mildew without materially

injuring the foliage, or even to an extent stimulated healthy growth, offer the most encouragement. The problem of spraying for the mildew is somewhat similar to that of applying arsenicals. In both cases the spraying must be done without introducing objectionable substances into the tissue of the plant. With arsenicals this has been accomplished by using arsenic compounds which are insoluble in water, and up to the present time the best results with the mildew have been obtained by following a like idea with the sulphur compounds.

Sulphur in the form of sulphides and the pure element has long been regarded as a good remedy for mildews. Many mildews yield to a simple dusting with flowers sulphur, especially in the warm climates. Where dusting proved ineffective liquid spraying with sulphur has often been resorted to. These liquid applications are of two kinds, those containing insoluble sulphur in suspension and those in which the sulphur is in solution in the form of sulphides. The soluble sulphides are combinations of sulphur with alkalis, such as caustic lime, caustic soda and caustic potash. When sulphur in the insoluble form is applied as a liquid spray the advantage over dusting is probably that of more thor-

ough distribution and better sticking properties. Soluble sulphur, on the other hand, has a more powerful and immediate action.

Sulphur in the free state apparently acts by means of its vapor, while the soluble sulphides have both vaporization and water solution as a means of action. The soluble sulphides fail to give satisfaction largely because of their over energetic immediate action, which causes plant injury. When used dilute enough to avoid injury their prolonged action is very slight, because the deposit of sulphur is so small, hence failure to control the mildew.

The soluble sulphides failed because of their solubility, and it occurred to the writer that something might be accomplished with sulphide sulphur combined in an insoluble form. There are several such sulphides, and the ones experimented with have already been mentioned, namely, those of copper and iron. These insoluble sulphides brought about marked control of the mildew with very little toxic effect on the plant. With iron sulphide there is apparently a stimulation of the plant which supplements the fungicide action. The composition and action of these insoluble sulphides will be discussed more fully later.

The small experiments to control the mildew, described in the preceding paragraphs, pointed out the lines upon which more extensive control work might be undertaken with greatest hope of success. These experiments were conducted during the spring and summer of 1908, and are given in detail as follows:

The trees included in this and the following experiments were located in the C. H. Rodgers orchard, situated in the Pajaro Valley, about one mile from Watsonville. This orchard comprises 100 acres, now all in apple. A considerable portion of the trees are 18-year-old Newtowns, a smaller number, including the White Winter Pearmain, are over 30 years old, and another large portion is in Newtowns eight years old. The experiments were each distributed so as to include these three portions of the orchard, and, in addition, some young Bellflower trees were also treated.



One-year Cherry growing at Monce Nursery

## FOR SALE AT H.G. Monce's Nursery at Nampa, Idaho

30,000 Cherry trees  
12,000 Jonathan  
5,000 Rome Beauty  
5,000 Winesap  
1,000 Plum trees  
Gregg Raspberries  
Cuthbert Raspberries  
Phenomenal berry  
Loganberry  
Gooseberry  
Currants  
Grapes  
Strawberries  
Ten varieties of  
Evergreens  
Oaks  
Hardwood Shade Trees  
30,000 Carolinas  
Price list free

## KELLY'S TREES ARE TRUE TO NAME

# 2,000,000 TREES 2,000,000

For fall and spring planting. 350,000 Winesap, 350,000 Jonathan, 200,000 Rome Beauty, 100,000 Delicious and all other leading varieties in Peach, Pear, Plum and Cherry

*Before Placing Your Order Write to*

**Tim Kelly, Proprietor Wapato Nursery, Box 197, Wapato, Washington**

In the iron sulphide experiments the following formulas were used:

Formula (a)—10 pounds of iron sulphate to 100 gallons.

Formula (b)—15 pounds of iron sulphate to 100 gallons.

Formula (c)—7½ pounds of iron sulphate to 100 gallons.

Formula (d)—5 pounds of iron sulphate to 100 gallons.

First spraying, March 27, 1908; cool and cloudy weather; formula (a); applied to four full bearing White Pearmain trees, three young Bellflower trees, two full bearing pear trees and 16 full bearing Newtown trees; amount used, 200 gallons. Formula (b) applied to eight-year-old Newtowns; amount used, 100 gallons. The apple trees were not in bloom, but the blossom buds were unfolding, and the White Winter Pearmain had considerable foliage. One pear tree was in bloom and the other just ready to expand its blossoms.

Second spraying, April 28, 1908; clear and warm weather; formula (c) applied to the same trees receiving the first spraying. Arsenate of lead was used in the mixture applied to the bearing trees at the rate of six pounds to 100 gallons. Amount of spray used, 300 gallons. Young Newtowns received 100 gallons without arsenate of lead. All the trees were past blooming, and the calyx cups of the apples were rapidly closing. Foliage had now become abundant.

Third spraying, June 3, 1908; weather clear, temperature moderate, light wind; formula (a) applied to the same trees receiving the other sprayings. The 300 gallons applied to the bearing trees contained arsenate of lead at the rate of four pounds to 100 gallons. The trees were all in heavy foliage, apples size of walnuts and larger.

Fourth spraying, August 1, 1908; warm and cloudy weather; formula (d) applied to one-half of the trees receiving the other sprayings, each variety. The pear trees were omitted. Arsenate of lead was used in the mixture at the rate of six pounds to the 100 gallons, and those trees not receiving the iron sulphide application were sprayed with arsenate of lead at the same rate. On the full bearing trees the foliage growth of the season was practically complete, and the fruit was fully two-thirds grown.

Fifth spraying, September 4, 1908; temperature moderate, fog during night; formula (d) plus four pounds of arsenate to the 100 gallons, applied to the trees receiving the fourth application.

Copper sulphide (preparation similar to iron sulphide). Dates of application and conditions of the experiment the same as for iron sulphide. Not applied to pear or Bellflower apple trees, but other varieties the same as iron sulphide.

First spraying, 10 pounds of copper sulphate and three pounds of sulphuric acid precipitated with excess of lime-sulphur solution, 200 gallons of water. The sulphuric acid used to bring up sulphur content. Applied to seven White Winter Pearmain, 16 full bearing Newtowns and a number of eight-year-old Newtowns.

Second spraying, six pounds of copper precipitated with lime-sulphur solution and diluted to 200 gallons, plus 12 pounds

of arsenate of lead. Only six of the full bearing Newtowns received this application. Other varieties the same as first spraying.

Third spraying, five pounds of copper sulphate precipitated with lime-sulphur solution and diluted to 200 gallons, plus eight pounds of arsenate of lead. Applied to trees receiving the second spraying.

Fourth spraying, five pounds of copper sulphate precipitated with lime-sulphur solution, plus 12 pounds of arsenate of lead, diluted to 200 gallons. In this spraying the small Newtown trees were omitted and the large Newtowns receiving the first application, but not the second and third, were sprayed. Also a few trees not previously sprayed during the season.

Lime-sulphur solution, applied to the same varieties as the copper sulphide experiment. Conditions and date of the experiment the same.

First spraying, 1 to 19, that is one-half winter strength of the 32 degrees Beaume commercial solution, 200 gallons applied to old trees and 100 to young.

Second spraying, 1 to 39, or one-fourth winter strength. That applied to the old trees contained 10 pounds of barium carbonate to the 100 gallons. The application to the young trees contained no barium carbonate.

Third spraying, 1 to 60, or one-sixth winter strength. That applied to the old trees contained 10 pounds of barium carbonate to 100 gallons. The eight-year-old Newtowns were sprayed with lime-sulphur solution at the strength of 1 to 100.

Fourth spraying, 1 to 100, plus 10 pounds of barium carbonate to the 100

## FRUIT GROWING AND BEE KEEPING

Learn what an ideal combination it makes. "Gleanings in Bee Culture" tells all about it. Six months' trial subscription 25c. 64-page book on Bees and supply catalog free. **THE A. I. ROOT CO.,** Box 83, Medina, Ohio.

More Fruit Growers are writing us every year that they get  
the Best Results from

## Dependable Brand Lime-Sulphur Solution

Manufactured by **GIDEON STOLZ CO.,** Salem, Oregon  
WRITE FOR SPRAY BOOK AND PRICES

## Montana Fruit Growers

AND OTHERS OF HIGH ALTITUDE

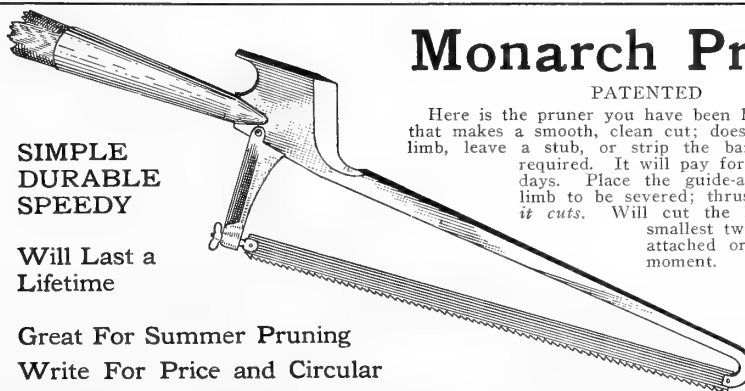
**W**E are now ready to book your orders for fall and spring delivery of McIntosh Red and Wageners. For Northwest fruit growers in general, a full stock of all standard varieties—Spitzenbergs, Jonathans, Winesaps, Rome Beauties, etc., and all other kinds of fruit trees and shrubbery.

THIRTY-ONE YEARS IN BUSINESS

## Milton Nursery Company

A. Miller & Sons, Incorporated

Milton, Oregon



## Monarch Pruner

PATENTED

Here is the pruner you have been looking for; one that makes a smooth, clean cut; does not bruise the limb, leave a stub, or strip the bark. No ladder required. It will pay for itself in a few days. Place the guide-arm against the limb to be severed; thrust forward, and it cuts. Will cut the largest limb or smallest twig. The saw is attached or detached in a moment.

**SIMPLE  
DURABLE  
SPEEDY**

**Will Last a  
Lifetime**

**Great For Summer Pruning  
Write For Price and Circular**

**MONARCH PRUNER CO.** Box 1463, Spokane, Washington



gallons. Applied to one-half the old trees. Young trees omitted.

These applications were all made very thoroughly with a power spray outfit. The objects of the experiments were: First, to determine the relative efficiency of iron sulphide, copper sulphide and the lime-sulphur solution as a control for

the mildew; second, to determine the amount of control of the mildew that could be obtained by application made at the same time as those for the codling moth; third, to determine if barium carbonate could be substituted for arsenate of lead as a control for the codling moth; fourth, to determine what control might

#### IRON SULPHIDE SPRAYING—YELLOW NEWTOWN PIPPINS

PLOT A—Five sprayings.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	10.	133.	0.	10.	0.	0.	98.
	10.	115.	0.	7.	0.	0.	78.
	4.	120.	0.	13.	0.	0.	88.
	13.	130.	0.	9.	0.	0.	92.
	8.	128.	0.	11.	0.	0.	100.
	15.	130.	0.	16.	0.	0.	84.
	9.	122.	0.	23.	0.	0.	75.
	10.5	117.	0.	11.	0.	0.	91.
Total .....	79.5	995.	0.	100.	0.	0.	706.
Average .....	9.94	124.4	0.	12.5	0.	0.	88.25
Per cent .....			0.	10.	0.	0.	70.9

PLOT B—Three sprayings with iron sulphide, fourth with arsenate of lead.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	10.	128.	0.	16.	0.	0.	88.
	18.5	126.	0.	13.	0.	1.	95.
	12.	135.	0.	15.	0.	0.	103.
	6.	138.	0.	7.	0.	0.	90.
	14.	128.	0.	7.	1.	0.	75.
	15.	144.	0.	9.	0.	0.	106.
	10.	127.	0.	15.	0.	0.	94.
	10.25	125.	0.	21.	0.	0.	94.
Total .....	95.75	1051.	0.	103.	1.	1.	730.
Average .....	11.97	131.3	0.	12.87	.125	.125	91.25
Per cent .....			0.	9.8	.095	.095	69.

PLOT C—Unsprayed checks in same locality.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	15.25	140.	2.	30.	0.	1.	103.
	18.	140.	0.	38.	0.	1.	88.
	8.	127.	0.	25.	0.	2.	83.
	13.	119.	2.	32.	0.	0.	89.
Total .....	54.25	526.	4.	125.	0.	4.	363.
Average .....	13.5	131.5	1.	31.25	0.	1.	90.7
Per cent .....			.76	23.7	0.	.76	68.69

PLOT D—General average in the same orchard with experimental plot.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	100.	136.	0.	92.	1.	0.	93.
	100.	139.	0.	30.	0.	0.	112.
Total .....		275.	0.	122.	1.	0.	205.
Average .....		138.	0.	61.	.5	0.	102.5
Per cent .....			0.	44.2	.3	0.	73.6

The orchard was sprayed four times with arsenate of lead and the first spraying contained bordeaux mixture (formula 4-5-50).

#### COPPER SULPHIDE—YELLOW NEWTOWN PIPPINS

PLOT E—Four applications.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	7.	107.	0.	11.	0.	0.	59.
	3.	148.	0.	12.	0.	0.	105.
	5.	123.	0.	12.	0.	1.	91.
	7.	119.	0.	18.	0.	0.	66.
	11.	130.	0.	22.	0.	0.	91.
	8.	122.	0.	13.	0.	0.	91.
Total .....	41.	749.	0.	88.	0.	1.	503.
Average .....	6.87	125.	0.	14.66	0.	.16	84.
Per cent .....			0.	11.72	0.	.13	67.2

PLOT F—General average near experiment.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
		137.	0.	50.	0.	1.	116.
Per cent .....			0.	32.55	0.	.735	84.6

#### IRON SULPHIDE—WHITE WINTER PEARMAINS

PLOT G—Five applications, September 4, 1908, iron sulphide same as fourth, arsenate 2 pounds to 50 gallons.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	38.	200.	0.	23.	0.	0.	52.
	33.	146.	0.	10.	0.	0.	48.
Average .....	33.6	173.	0.	16.5	0.	0.	50.
Per cent .....			0.	9.53	0.	0.	29.

PLOT H—Three iron applications, plus one arsenate of lead September 4th.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	24.	130.	0.	11.	0.	0.	47.
	14.	119.	0.	13.	0.	0.	38.
Average .....	19.	124.5	0.	12.	0.	0.	42.5
Per cent .....			0.	9.6	0.	0.	34.21

#### LIME-SULPHUR SOLUTION—WHITE WINTER PEARMAINS

PLOT I—Four sprayings, three with barium carbonate.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	72.	154.	0.	2.	0.	34.	60.
Average, three trees .....	24.		0.				
Per cent .....			0.	1.3	0.	22.1	39.

PLOT J—Lime-sulphur 3, with barium carbonate 2, arsenate of lead, August and September.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	42.	169.	1.	11.	0.	13.	37.
	25.	165.	1.	9.	0.	14.	55.
Average .....	33.5	167.	1.	10.	0.	13.5	46.
Per cent .....			.6	6.	0.	8.	27.9

PLOT K—Check, sprayed in March with lime-sulphur.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	27.	174.	0.	7.	0.	42.	53.
Per cent .....			0.	4.	0.	24.1	30.4

PLOT L—Copper sulphide spraying with arsenate of lead, arsenate of lead alone, in September.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	30.	170.	0.	16.	0.	1.	56.
Average, four trees .....	30.	170.	0.	18.	0.	0.	62.
Average, three trees .....	30.	170.	0.	17.	0.	.5	59.
Per cent .....			0.	10.	0.	.3	34.7

PLOT M—Check unsprayed, except September with arsenate of lead.	Boxes	No. in Box	Scab	Greedy Scale	San Jose Scale	Worms	Russet
	17.	117.	4.	16.	0.	27.	102.
Per cent .....			2.3	9.35	0.	15.2	59.

## Strawberry Plants

CLARK'S SEEDLING  
THE KIND THAT MADE  
HOOD RIVER FAMOUS

Rates:

100 plants at \$1.25  
1,000 plants at \$5.00  
5,000 to 10,000 plants at  
\$3.00 per thousand

Large orders at special prices

The Quality of our Plants is the Best

**F. B. KIMBALL**

Successor to E. L. KLEMER  
HOOD RIVER, OREGON

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

**TRUE-TO-NAME NURSERY**

Phone 2002K Hood River, Oregon

## RICHLAND NURSERY

Richland, Washington

**FRUIT TREES**

Complete stock of leading varieties of  
Apples, Pears, etc.

WRITE US FOR PRICE LIST

**NURSERY SALESMEN**

Drop us a line for information regarding  
our splendid proposition.

Big commissions paid weekly.

OUTFIT FREE

**SALEM NURSERY COMPANY**  
SALEM, OREGON

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 1 and 2 Lambers-Sargeant Building  
Corner East Alder Street and Grand Avenue  
PORTLAND, OREGON

## WALNUT TREES

Mayette, Franquette,  
Parisienne, Etc.

Our trees grafted on the Eastern black walnut stock, are hardier and better for the Northwest as well as for Eastern planting. Write for price list and other information.

**The Louisiana Nut Nurseries**

Jeanerette, Louisiana

GET CATALOG AND PRICE LIST  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlemier

Grower of Choice

### NURSERY STOCK

F. W. SETTLEMIER

Woodburn, Oregon

## To the Shrewd Business Man

A commercial orchard is a good income producer while you live, the best real estate agent you ever had when you are ready to sell, and a valuable asset to leave to your widow and orphans when you have reached the end of life's journey.

If an old reliable nursery is of any specific importance to the prospective planter, we kindly ask you to consider with us before buying your trees.

### Albany Nurseries

(Inc.)

ALBANY, OREGON

## Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

Stewart Hardware & Furniture Co.

22,000 feet floor space Hood River, Oregon

## POULTRY AND FRUIT



One man made over \$18,000 last year—many others make a nice fortune from a few hens and a small piece of ground. But you must know how. American Hen Magazine tells how. It gives the secrets from A to Z in plain language. Subscription price 25 cents a year. Descriptive literature free.

American Hen Magazine Council Bluffs, Iowa

107½ acres of land, 1½ miles from Talent and 8 miles southeast of Medford. Rich red clay soil; slope west and northwest. One of the best undeveloped fruit tracts in Rogue Valley. Will sell outright for \$100 per acre, or would prefer to sell half interest to some capital to develop property. Write for development plan, etc.

Wagner Creek Nursery &  
Orchard Co.

TALENT, OREGON

be obtained with the apple scab by the use of sulphur compounds; fifth, to become acquainted with the physiological action of sulphur compounds upon the trees and to observe unexpected phenomena.

The mildew spraying experiments were all well checked, both by unsprayed trees and the general spraying for codling moth and apple scab. The general spraying consisted of three arsenate of lead applications, the first being applied about the first of May. This application contained bordeaux mixture.

The first mildew applications were too early to have much effect upon this disease, but we hoped to gain considerable evidence on the subject of scab control. The experiments were not conclusive, however, because of the almost entire absence of the apple scab, due to the very dry spring. Such evidence as was obtained indicated the possibility of scab control by sulphur compounds. The first sulphur applications had no perceptible effect on the amount of mildew at the end of the season. This was shown by comparing trees receiving only the first spraying and unsprayed trees. The second and third spraying had a very decided controlling effect on the mildew, and in the case of iron sulphide, where there was very little plant injury, resulted in marked improvement in the condition of the trees. The fourth spraying was applied after the old trees had practically completed the full season's growth, and so did not result in any marked improvement in mildew conditions. The same may be said of the fifth spraying with iron sulphide. The young trees were still growing, and consequently responded to the application.

In the case of iron sulphide there was very little injurious effect, so the trees were able to respond to any beneficial action that the application might have. After the second spraying the foliage became noticeably more dense than on the check trees, and the new leaves were largely free from mildew colonies on the under surface. Spore production was also subdued upon the infected twigs. The mildew began to recover from the effects of the application in three weeks from the date of spraying. This indicated too long a period between the second and third spraying.

The third spraying was applied just preceding a long period of warm and dry weather. The mildew was much subdued by this application and the trees responded by further development of healthy leaves. This application was followed, however, by some sulphur injury to the trees. This injury was much less on the iron sulphide sprayed trees than the other experiments, although these received the largest amount of total sulphur. With the iron sulphide sprayed trees the injury was confined to the falling of fruit. On one tree this falling was estimated and found to be 18 per cent of the total, but this tree required propping at the end of the season, indicating a sufficient load. The falling of fruit was confined to Newtowns and Bellflowers.

The fourth spraying was only applied to half of the trees receiving the former

applications. At the time of this spraying (August 1st) the old trees had practically ceased growing, so the application was not productive of much apparent effect upon the mildew. This spraying was also apparently free from any injurious effect upon the trees.

The result of the iron sulphide applications for the season was practically the same for all varieties included in the experiment. The wood growth was very markedly increased, the foliage rendered more abundant and better developed, and the number of mildew infected twigs greatly reduced.

Copper sulphide was used much more than the iron sulphide in order to reduce the danger of injury. Copper sulphide is oxidized in the air to copper sulphate (bluestone), and so is quite capable of injuring foliage.

The first application produced negative results similar to those obtained with iron sulphide.

The second application brought about the same kind of a response from the trees as the iron sulphide, but not to so marked a degree. By the time of the third spraying some injury, due to copper sulphate, had become apparent. This injury developed to a greater extent, and largely counteracted the beneficial effect of the application.

The third application was followed by sulphur injury, resulting in falling of the fruit from the Newtowns. This falling was estimated to be 50 per cent of the total. There was no falling with the White Winter Pearmain, but the growth seemed to be retarded.

The fourth application was not followed by any noticeable increase of injury with the trees sprayed through the season. The total results of the copper sulphide applications were a noticeable control of the mildew, but accompanied by injurious effects that largely counteracted the benefit so derived.

The experience derived from the small experiments of the previous season with lime-sulphur solution had taught us that if the soluble sulphides were to be used at all it must be in very dilute solutions. The first spraying was applied before the blossoms had opened, and there was very little danger of doing serious injury to the trees, so it was decided to use half winter strength. In addition to the mildew experiments some trees were found infected with the San Jose scale, and were sprayed at the same time with full winter strength.

These applications scorched the young foliage, but not to a very serious extent. The blossoms expanded well, but were in some cases injured in appearance by the scorching of the tips of the petals. This injury to the petals did not affect the essential parts of the flower, so the fruit set well. The injury was very little greater with the full strength than the half strength application. As had been anticipated, the injury from these applications was entirely temporary, the trees recovering completely by the expansion of new foliage.

The mildew was apparently unaffected by the application, as indicated by com-

paring checks with the trees receiving only the first spraying.

The second spraying was applied when the trees were well covered with foliage, making it necessary to increase the dilution. The dilution used was one-fourth winter strength, but applied with the usual thoroughness. As a result of the spraying the Newtowns suffered considerable foliage injury. Young leaves were scorched and older ones fell quite freely in two weeks after the spraying. The White Winter Pearmain did not suffer

to nearly as great an extent, and the control of the mildew obtained enabled this variety to make a better growth than the checks. The injury to the Newtowns was greater than the beneficial effect, so that the trees were retarded in growth.

The third spraying was applied with a still greater dilution (one-sixth winter strength), but was followed by still further injury of the kind caused by the second spraying. This injury was supplemented by the typical sulphur effect obtained in the other experiments—that

is, the falling of young fruit, which amounted to about 40 per cent of the total.

The fourth spraying was only applied to half the trees and was increased in dilution to one-tenth winter strength. This application caused still further falling of leaves from the Newtowns. The accumulative effect of these sprayings was now noticeable with the White Pearmain, although these trees demonstrated their advantage over the checks throughout the season. The Newtowns, on the other hand, were injured more than benefited by the applications.

Arsenate of lead is quite likely to injure foliage unless it is the pure ortho compound  $Pb_3(AsO_4)_2$ , or one part of arsenic oxide to 2.90 parts of lead oxide. This danger of arsenic poisoning makes it imperative that whatever mixtures or substances are used with it it must be of such nature as not to break down the compound and release arsenic. The soluble sulphides are capable of decomposing arsenate of lead, and so it is not wise to use this arsenical in a mixture containing lime-sulphur solution. The insoluble sulphides, on the other hand, are not active chemically in neutral or alkalin mixtures, and so permit the use of arsenate of lead in a mixture containing them.

The fact that lime-sulphur solution and arsenate of lead have been mixed and applied together without apparent injury in certain cases merely means that under the conditions of the experiment arsenic sulphide was not injurious to the trees.

Since the mildew must be treated during the growth season it is a great economic advantage if the codling moth can be handled at the same time. With this end in view, arsenate of lead was used in the iron and copper sulphide experiments. These combined applications produced no injury that could be attributed to arsenic, and the control of the worms was excellent, as the tabulated results will show.

Barium carbonate was used with the lime-sulphur solution application with the same end in view—that is, the control of the codling moth. Salts of barium have been suggested as insecticides, and experiments with the carbonate proved it to be almost free from foliage injuring properties. There is no reaction between the soluble sulphides and barium carbonate, so this mixture could be used without fear of complications. The tabulated results show that barium carbonate was not successful in controlling the codling moth.

Any substance applied as a spray may be beneficial, neutral or injurious; that is, the substance has a direct physiological effect. The effect of the sulphur applications upon the trees have already been frequently referred to, but a more exact statement of these effects seems pertinent.

Sulphur applied as a spray (suspended in water) seems to have no physiological action early in the season (blooming time to three weeks later). When applied seven to nine weeks after blooming sulphur may cause falling of the young fruit. This shedding of fruit takes

## Winfield Nursery, Winfield, Kansas

### GROW TREES OF QUALITY

Their new work, Progressive Horticulture, fully illustrated, describes trees of quality in the making

## EMMETT NURSERY

THE LARGEST NURSERY PLANT IN IDAHO

OUR SPECIALTIES

PEACHES—CHERRIES—DWARF PEARS

A fine stock of all standard varieties of Apples, Fruit and Ornamental Trees, suited for the Northwest.

CHARLES P. HARTLEY, Proprietor

EMMETT, IDAHO

## RUSSELLVILLE NURSERY COMPANY

H. A. Lewis, Proprietor

Montavilla, Oregon

A progressive and up-to-date nursery. A full line of fruit and ornamental trees. Careful and reliable attention given to filling every order with first-class trees and plants. Satisfaction guaranteed. Nursery at Russellville, suburb of Portland. Take Montavilla car. Nursery one mile east of terminus. We still have a nice stock of the leading varieties of apple and cherry, and some nice peach trees. Send for prices.

### "I HAVE SO LITTLE FUNGUS"

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."

Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

PRICES: In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY

# Seeds

THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street J. J. BUTZER Portland, Oregon  
Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

# Lime-Sulphur

The C. G. Betts Co.'s Guaranteed Solution

EVERY BARREL LABELED WITH MEASURED CONTENTS

SPOKANE SEED CO., Spokane, Washington

GENERAL SALES AGENTS

WRITE FOR PRICES

place two or three weeks after the application, and in our experience may amount to 50 per cent of the crop. The smallest and least promising apples are the ones most subjected to shedding. This shedding is due to the degeneration of the fiber (vascular tissue) of the fruit stem at the point of juncture with the stem, and is analogous to the process, causing the normal falling of leaves. We have observed fruit shedding only with the Newtown and Bellflower varieties of apples, and it occurs at the time when there is likely to be dropping from the so-called natural causes. The Bellflower

variety is frequently subject to a June shed of fruit, but in the season of 1908 the check trees lost no fruit at this time. The June applications which caused falling of fruit had little or no effect upon the foliage.

When sulphur is applied to apple trees eleven weeks after blooming, or later, shedding of foliage is very likely to be induced. The foliage shedding is confined to the more mature leaves, and may be as great as 75 per cent even with very light applications of sulphur. The leaves fall in two or three weeks after the application, and without losing their

green color or turgidity. The falling is apparently produced in the same manner as the natural shedding in the fall of the year.

Injury to tender foliage and the skin of the young fruit, such as the russetting effect of bordeaux mixture, has not been encountered with the insoluble sulphur applications.

The injurious effects above described would be sufficient to discourage the use of sulphur compounds were it not for the fact that an immunity against these effects can be developed in the tree. If the sulphur spraying is begun early in the season and continued without too great intervals between the applications the injurious effects do not develop, or at least to only a very slight extent. The spraying experiments of 1908 illustrated the development of immunity to a very marked degree. In the copper sulphide plot (Newtowns) sixteen trees received the first application, but only six of these were sprayed the two following. The fourth spraying was applied to all the trees receiving the first application and to a few that had not previously been sprayed. As a result of the fourth application those trees that had been sprayed throughout the season lost no leaves, the trees receiving the first spraying and not the second and third lost from 5 to 10 per cent of the foliage, and those not previously sprayed lost 50 to 75 per cent. The same developed immunity applies to the shedding of the fruit also, for some small Newtown trees sprayed more frequently than those in the large plots lost no fruit.

Sulphur injury was obtained with all the compounds used, and so sulphur immunity may be developed with any of them, but with copper sulphide and the soluble sulphides, such as lime-sulphur solution, there are other injurious effects than those produced by sulphur, and which do not appear to develop immunity in the plant. Lime-sulphur solution kills young foliage (scorching) and does injury to the older leaves to a corresponding extent. These injured leaves may ultimately yellow and fall, and the effects cannot be distinguished from those produced by a large number of penetrating and poisonous substances. Copper sulphide does not injure young foliage, but the gradual change of the sulphide over to sulphate injures the foliage in time, and causes spot hole injury, yellowing and falling.

The physiological effects of sulphur should not be always regarded as injurious or neutral. Stimulation may result, and with iron sulphide this appears to be quite frequent. Trees sprayed systematically with iron sulphide appear to grow better than the removal of the mildew could account for.

The lime-sulphur solution is a noted insecticide, and sulphur is used with success against mites. It would not be surprising, then, if the sulphur applications used to control the mildew should also have some effect upon insect life. We have observed that wet applications of finely divided sulphur (ground in sand) destroyed colonies of green aphid (*Aphis pomi*) and the woolly aphid, especially

## Burpee's Seeds Grow!

*And the Burpee-Business Grows!*

If you would like to read about the Best Seeds that can be Grown and the Largest Mail-Order Seed Trade in the world, you should write to-day (a postal card will do) for *The 35th Anniversary Edition of THE LEADING AMERICAN SEED CATALOG*. A bright new book of 174 pages,—it is **free** to all who appreciate Quality in Seeds. Simply address **W. Atlee Burpee & Co., Philadelphia**

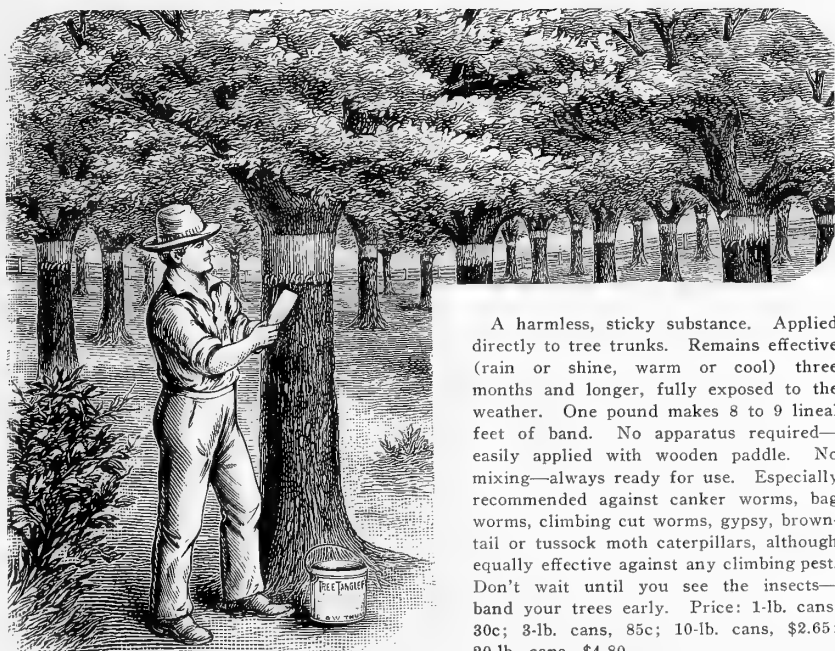
## FRUIT GROWERS, YOUR ATTENTION!

Royal Anne, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

**MONTE VISTA NURSERY  
SCAPOOSE, OREGON**

## BAND YOUR TREES WITH TREE TANGLEFOOT



A harmless, sticky substance. Applied directly to tree trunks. Remains effective (rain or shine, warm or cool) three months and longer, fully exposed to the weather. One pound makes 8 to 9 lineal feet of band. No apparatus required—easily applied with wooden paddle. No mixing—always ready for use. Especially recommended against canker worms, bag worms, climbing cut worms, gypsy, brown-tail or tussock moth caterpillars, although equally effective against any climbing pest. Don't wait until you see the insects—band your trees early. Price: 1-lb. cans, 30c; 3-lb. cans, 85c; 10-lb. cans, \$2.65; 20-lb. cans, \$4.80.

SEND FOR BOOKLET

**The O. & W. Thum Company** GRAND RAPIDS MICHIGAN

Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot



during warm weather. The summer sulphur applications might also be supposed to have some effect upon the young of scale insects. The insoluble sulphides of iron and copper proved rather neutral as compared with sulphur ground in sand. We then did not expect to obtain a control of aphids by the use of these compounds, but were somewhat unprepared to note a marked increase in the woolly aphid where iron sulphide and copper sulphide was used.

The woolly aphid was decidedly more abundant on the sprayed than on the check trees, and may be explained in two ways. First, the increased vigor of the sprayed trees produced a more sappy condition, giving optimum nutrition conditions for the aphid. Irrigation often

produces the same effect, and, further, those trees sprayed with lime-sulphur solution did not develop more, but rather less aphid infection than the checks. Here the trees had been retarded rather than stimulated by the applications, but the physiological sulphur effects were markedly in evidence. Second, the fungicidal action of the iron sulphide spray may reduce the fungus diseases of the aphids, and so aid them. This explanation is sometimes offered to account for the same results obtained with the Bordeaux mixture.

With regard to scale insects we did not get very positive data. There was only a trace of the San Jose scale on the sprayed trees or the immediate checks. With the greedy scale (*Aspidiotus rapax*) we appeared to obtain 50 per cent control by the use of iron sulphide. This result appears in the tabulated fruit counts. The green aphid did not increase materially upon those trees that were most badly attacked by the woolly aphid.

The increase of the woolly aphid by the use of iron sulphide may prove to be a somewhat serious complication requiring special treatment to reduce the insects where mildew control operations are carried on.

In making the counts, as shown in the table herewith, the apples from each tree were placed in boxes under it and then an average box made up from these by taking fruit at random from all the boxes. In taking the fruit from the boxes care was taken not to look at the apples, and so avoid conscious selection. When averages were taken from the general spraying or main body of the orchard they were made up from 50 to 100 boxes. The apples in the average box were then sorted, graded and otherwise selected to show conditions and percentages as desired. We have made a careful study of this method of obtaining average results and find that it is both rapid and accurate. The accuracy is, of course, determined by the number of average boxes taken.

The fruit from lime-sulphur sprayed Newtown trees was inadvertently picked and removed before it could be counted. The fruit from the pear trees was not counted, but was examined and found to be free from scab.

These fruit counts show that the trees of the White Winter Pearmain variety

that were sprayed with iron sulphide produced the largest fruit, taking into consideration the yield per tree. The tree that produced 38 boxes was much overloaded, and so yielded very small fruit. The trees in plot (h) yielded fruit of remarkably fine size and quality, and surpassed anything in any of the other plots. The apples from the iron sulphide plots were distinctly superior to those from the checks. Check plot (k) was sprayed in March with lime-sulphur solution (see first mildew application) and showed no scabby fruit, and while the scab was light even on unsprayed trees (see check (m)) it would indicate that the soluble sulphides applied just before the blossoms open may have a marked influence upon this disease. The com-

### SURPLUS STOCK

We have the following stock in good grades at prices that will please you:

#### APPLE

Baldwin, Bismarck, Black Ben, Delicious, Fall Wine, Gano, Grimes Golden, Hyde King, Jonathan, King David, Ingram, McIntosh Red, Nonesuch, Red June, Rome Beauty, Spitzenberg, Stayman Winesap, Wagener, Whitney, Winesap, Yellow Bellflower, Yellow Newtown and Yellow Transparent.

#### PEAR

Anjou, Bartlett, Comice, Idaho and Winter Nelis.

#### PEACH

Carmen, Champion, Cox Cling, Crawford Early, Crawford Late, Early Charlotte, Elberta, Engalls Mammoth, Fitzgerald, Foreman, Guin, Muir, November, Orange Cling, Phillips Cling, Salway, Slappy, Smock, Triumph and Tuscan Cling.

#### CHERRY

Bing, Black Tartarian, Early Richmond, Eng. Morrill, Lambert, Late Duke, Oxheart, Royal Ann and Yellow Spanish.

#### PLUM

Bradshaw, Burbank, Damson, Diamond, Grand Duke, Green Gage, Maynard, Wild Goose, Macy and Yellow Egg.

#### PRUNE

Italian, Petite, Silver and Tragedy.

#### APRICOT

Golden, Moorpark, Peach, Tilton and Yakimini.

#### NECTARINE

New White and Boston.

#### NUT TREES

English Walnut, Almond, etc.

#### ORNAMENTAL

Catalpa, Black Locust, Mountain Ash, American Elm, Norway and Silver Maple, Mulberry, and Norway Spruce.

All the above stock clean, hardy and true to name. Write for special spring prices.

### THE SUNNYSIDE NURSERY COMPANY

SUNNYSIDE, WASHINGTON

## Do you know

That it takes a great deal of science and skill to produce the kind of trees that will make the best growth and give the best satisfaction?

Many people imagine that with a good location one has only to plant the tree in the spring and dig it up in the fall. This may do for some, but not with us.

We took particular pains to secure the best location here in the Yakima Valley, where the soil is exceedingly rich and well drained, and where the growing season is long.

By our constant cultivation during the growing season, and otherwise assisting Nature whenever possible, we turn out a fine, stocky tree with a splendid lot of healthy, fibrous roots, unsurpassed anywhere.

A good root system is the foundation of a tree, and without this good root system you cannot secure the best results.

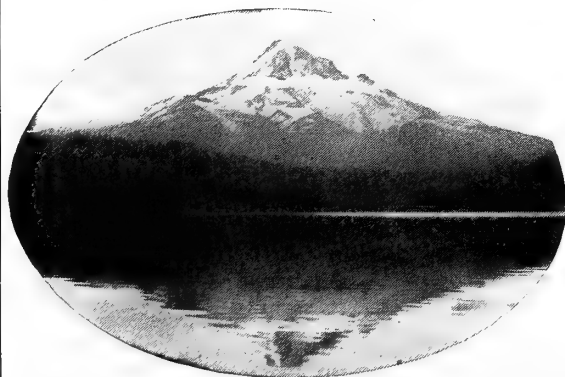
If you intend to plant now or next season, write for our catalog. It will save you money.

### YAKIMA VALLEY NURSERY COMPANY

TOPPENISH, WASHINGTON

More Salesmen Wanted

Within the Shadow of Glorious Mount Hood



*Are Grown the World's Most Famous Apples*

Last year the apple crop of Hood River was valued at \$1,000,000.

About 1,000 acres in actual bearing produced this entire crop.

**\$500 per acre is an average yield.**

\$2,000 per acre is an average price for full bearing orchards.

*Clip out and mail now*

### FIVE YEAR

Orchards on  
easy payments  
for

**\$500 per acre**

Hood River District Land Co., Hood River, Oregon.

Sirs: Please send me information regarding your easy payment plan of purchasing orchards.

Name .....

Address .....

## THE PERFECT PRODUCT

Combines the highest standard of manufacture with chemical and physical qualities, giving sticking power, miscibility and extremely fine division. It meets the most exacting requirements of the modern scientific orchardist.

# HEMINGWAY'S LEAD ARSENATE

*Completely complies with the Federal Laws. Complete analysis showing 15 per cent arsenic oxide on every package. Send for booklet and prices*

Full Stocks Carried by **KERR, GIFFORD & CO., Portland, Oregon**

HEMINGWAYS LONDON PURPLE CO., Ltd., 64-66 Water Street, New York

plete absence of the apple scab from all the plots sprayed with iron sulphide, copper sulphide and lime-sulphur solution would also indicate that this fungus may be controlled by the use of sulphur sprays.

The greedy scale appeared to be quite as abundant on fruit from the sprayed White Winter Pearmain as the checks, with the exception of those sprayed with the lime-sulphur solution, including the check (k), which received only the March spraying. These results would indicate that spraying with the lime-sulphur solution just previous to the opening of the blossoms will have a decided effect upon the greedy scale even when only half winter strength is used.

The results with barium carbonate show quite conclusively that the substance is not capable of controlling the codling moth when used as a spray. These plots also show that a very considerable control of the codling moth is obtainable by late spraying with arsenate of lead (j).

Perhaps the most important results are those indicated by plot (h), which shows that for bearing trees the entire benefit from iron sulphide spraying is derived in the spring and early summer. The Newtown plots indicate the same thing, as will be seen by comparing (a) and (b). All the Newtown plots show a marked control of the greedy scale by the insoluble sulphide application, comparing (a) and (b) with (c) shows a 50 per cent reduction. In making the greedy scale records no distinction was made between

those fruits that had one insect and those that had several upon the rind. This method may have given rise to some errors, as with the White Winter Pearmain more than one scale to the fruit was seldom found. At any rate the discrepancy in results with the greedy scale between the Newtown and White Winter Pearmain plots is hard to explain, and throws doubt upon the responsibility of the sulphur applications in producing these results.

What we have called iron sulphide is a somewhat complexed body produced by the precipitation of a water solution of iron sulphate (ferrous sulphate) with the lime-sulphur solution. The reaction throws down iron sulphide insoluble, and also calcium sulphate (gypsum), where the amount of water present is not sufficient to dissolve this substance. When these reactions are completed there is a considerable amount of sulphur left over, and, as there is nothing for it to combine with, it appears in the free state, or precipitated sulphur. Hence iron sulphide as used in experiments herein described is a mixture of iron sulphide, gypsum and precipitated sulphur.

In preparing iron sulphide the sulphate of iron (copperas) is dissolved in water at the rate of one pound to 1.5 or 2 gallons and then this solution precipitated with lime-sulphur solution. For this purpose it is most convenient to use the commercial solution, but if this cannot be obtained it may be prepared according to the formula given in a following paragraph. While adding the

lime-sulphur solution the iron sulphate solution is stirred constantly, and only enough of the lime-sulphur solution is added to completely precipitate the iron. When this end point is reached the mixture becomes colored with the lime-sulphur solution. Before the end point the mixture is a thick black muck suspended in a clear colorless liquid. The end point is rather hard to determine exactly because of the thick black mass in which the color must be distinguished. In order to insure the absence of soluble sulphides and sulphates we wash this precipitate in several changes of water. For this purpose about double the original quantity of water is added and then the precipitate well agitated, after which it is allowed to settle for several hours. The clear liquid is then decanted, and if the lime-sulphur solution is in excess it will have the color of that solution, but if the iron sulphate is in excess the liquid will be colorless. If the liquid is colored with lime-sulphur solution the washing process is repeated until the color disappears.

The exact quantity of lime-sulphur solution is something that cannot be very well stated, as the strength or concentration of this solution is subject to considerable variation. With the commercial solution of 32 degrees Beaume one pound of iron sulphate will require about 0.232 gallons of the solution. This quantity can be multiplied by the number of pounds of iron used to give total quantity.

In making iron sulphide the work is very conveniently done in barrels. Then

to 15 pounds of copperas may be dissolved in one-half barrel of water (best done by suspending in a sack, same as with bluestone), and then the lime-sulphur solution added. Agitate thoroughly while adding the sulphur solution, and when enough has been added pour in water to fill the barrel. Agitate thoroughly (best done with a shovel or spade) and then allow to settle for several hours. Now decant the clear liquid by tipping the barrel slowly so as not to stir up the precipitate. Continue pouring off the liquid as long as it can be done without loss of the black precipitate. Refill the barrel with water, agitate, allow to settle and decant again; continue the operation until there is no color of lime-sulphur solution left in the clear liquid (four or five times). The precipitate is now ready for dilution and application.

**Formula for Lime-Sulphur Solution.**—Sulphur, 66 pounds; lime, 33 pounds; water (to prepare), 50 gallons. Place the water in a boiling vat that will carry the quantity without danger of boiling over. Then, when fairly hot, add the lime, stirring to insure the formation of a smooth milk of lime. The sulphur should now be added, and the mixture boiled moderately for 45 minutes to an hour. If the water boils away very much more hot water should be added from time to time. During the boiling stir every few minutes by raking over the bottom of the vat with a hoe.

A very good practice in handling sulphur is to pass it through a sieve, break

up the lumps and then moisten it with a small amount of water by kneading. Sulphur so treated mixes with the milk of lime better.

When this formula has been boiled sufficiently it will be a very dark colored, rather thin liquid, with only a small amount of sulphur left undissolved. The solution is now ready for straining through burlap or cheese cloth. The undissolved sulphur can be returned to the vat to be worked up with the next batch.

Copper sulphide is prepared in the same manner as the iron sulphide, but is of very little value, and so will be dismissed without further comment.

According to the results obtained in the experiments already described the spraying in March (just before the blossoms opened), the application of iron sulphide had little, if any, effect upon the mildew, but the apple scab is often susceptible to spraying at this time. Further, this spraying is too early for leaf-eating insects. For these reasons it is not necessary to use iron sulphide at this time, but a spraying with lime-sulphur solution, one-half to full winter strength, may prove very beneficial in controlling the apple scab and San Jose scale, also, probably, the greedy scale.

The first iron sulphide spraying for the mildew should be applied along with the calyx cup spraying for the codling moth. This spraying is applied as soon as the fruit forming blossoms have shed their petals, and, of course, must contain arsenate of lead.

The use of arsenate of lead along with the iron sulphide requires that the sulphide precipitate should be very carefully washed to free it from soluble sulphur, so it will not injure the lead. For this spraying 10 pounds of iron sulphate (copperas) precipitated with lime-sulphur solution and carefully washed should make 100 gallons of spray. With this use six pounds of arsenate of lead. Add the arsenate of lead to the spray tank after it has been well worked up in a small amount of water.

Spray very thoroughly, endeavoring to fill the blossom cups with the mixture. Bordeaux nozzles are becoming very popular for this first spraying. The nozzles should be crooked on the rod at an angle, so that the stream can be directed downward by a simple twisting of the rod. This is done in an effort to fill the blossoms that are standing straight up. Some of the growers in the Northwest spray from platforms in order to accomplish this better.

Of course all these precautions are for the codling moth, but at the same time the iron sulphide is being very thoroughly applied, and will do the maximum of good. It may be remarked here that the black color of the iron sulphide spray brings about more thorough work, as the men can see any parts missed very readily.

This spraying will, under most conditions, be sufficiently early to control the apple scab in the Pajaro Valley and adjoining sections, but, as has already been stated, the spraying in March with lime-sulphur solution may prove very

beneficial in controlling early attacks of the scab. In this paragraph we are assuming the substitution of iron sulphide for the bordeaux mixture ordinarily used, but are not certain that the control of the scab will be equal to that obtained with the old and well tried fungicide. We know that there was no estimable percentage of scabby fruit upon the iron sulphide sprayed trees, while those not sprayed with any fungicide showed a small percentage. Also the spores of the apple scab fungus are prevented from germinating by the presence of a small amount of iron sulphide in the water with the spores.

The second iron sulphide spraying for the mildew should be applied about three weeks after the first, but may be

## SEATTLE

Increased 194 per cent in population, according to Uncle Sam's last census. This is more than any other large city in the PACIFIC NORTHWEST.

### WASHINGTON

Leads all states of the Union in growth, having increased 120.4 per cent, according to the same authority.

If you want accurate information about Seattle and Washington, subscribe for

### PACIFIC NORTHWEST COMMERCE

The official publication of the Seattle Chamber of Commerce. Comes monthly, \$1.50 a year.

Address

### PACIFIC NORTHWEST COMMERCE

Suite 842 Central Building  
SEATTLE, WASHINGTON

## SLOCOM'S BOOK STORE

### Office Supplies Stationery

Ledgers, Journals, Time Books

Memorandum Books

Rubber Stamps

Souvenir Postals

Picture Frames

IF YOU WANT TO KNOW ABOUT

## OREGON

SUBSCRIBE FOR

### The Chamber of Commerce Bulletin

The largest commercial magazine in the West

Devoted to upbuilding Oregon and  
the Pacific Northwest

SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

### The Chamber of Commerce Bulletin

DAVID N. MOSESSEHN, Publisher

Suite 616 Chamber of Commerce Building  
Portland, Oregon

## THE Sunnyside Nursery Company

Capital paid up, \$100,000

WE HAVE NO AGENTS  
SELL DIRECT

**G**ET our prices and save money. Trees first-class. We lead, others follow. Have several hundred thousand finest peach trees ever grown in the West. Cherry, pear and apple in numbers that foot up millions. If planted in a line would make over three rows, the usual distance of planting, from Seattle to New York city.

WRITE US AND MENTION  
THIS PAPER

Main Office

SUNNYSIDE, WASHINGTON

## Profits Without Worry

Are you one of the many people who know the Hood River apples, their quality, and the profits to be derived from producing them?

Are you unable to share in the profits of this wonderful business because you have not enough capital to own an orchard or cannot leave your present pursuits to engage actively in apple culture? If you are, write at once for the prospectus of the Oregon Apple Company of Hood River.

This company has been organized for the purpose of producing a profit from the growing of apples. To this end 300 acres of the best apple land in Hood River Valley has been purchased, and the services of the well-known horticulturist, George I. Sargent, as manager, have been secured. Mr. Sargent will have charge of the planting and care of the tract, which insures from the outset a high-class orchard.

The capital stock of the Oregon Apple Company of Hood River is \$300,000, of which \$60,000 is preferred. The common stock has been subscribed, with which 300 acres of the best land in the upper Hood River Valley has been secured, together with the larger part of the necessary additional operating capital to be supplied by profits derived from the use of the land between the trees. In order to further assist in the development of the tract, this issue of preferred stock is being made. This stock is preferred in dividends to the extent of the first 10 per cent earned, and shares with the common stock on profits from the sale of apples greater than the first 10 per cent.

This stock is issued in \$10.00 shares and is sold at par. Should the investor wish to pay for it in monthly installments through a period of five years, he may do so by paying 20 cents per share per month for fifty months.

A discount of 8 per cent, simple interest, will be allowed for cash.

This stock is non-cumulative and non-assessable.

This proposition lets you have orchard profits without the care, worry and work of operating.

It lets you have orchard profits without the usual large cash purchase price of a high grade orchard.

It gives you a high rate of interest on your savings.

The operating expenses of this large tract will be much less per acre than the operating expense on a small tract of ten or twenty acres.

The equipment needed will be much less than that needed on 300 acres subdivided in the usual ten-acre tracts.

Consequently the profits will be greater.

The assurance to the preferred stockholder rests in the fact that the common stockholders are so confident of the profits to be accumulated from these orchards that they are delivering the land, part of the running capital and services for five years, having no share in the profits from the sale of these apples until the preferred stockholders have been paid their 10 per cent dividend, and are then willing to share equally with the preferred stock in all amounts greater than this 10 per cent. This acts as an insurance to the preferred stock that high class care will be given in order to accumulate profits sufficient to pay dividends on the common stock.

Write for further information today.

### THE OREGON APPLE COMPANY OF HOOD RIVER

21 Heilbronner Building

HOOD RIVER, OREGON

delayed as long as a month with fair results. The three week period is strongly urged, however, both to bring about better control of the mildew and develop sulphur immunity in the trees, so that there will be no loss of foliage or fruit as a result of the applications. This second spraying need contain no arsenate of lead, but no harm is done by using the arsenate if it is free from burning properties (ortho), and may do good if there are caterpillars present. In our experience the formula for this spraying should be seven pounds of copperas, precipitated with lime-sulphur solution, washed and diluted with 100 gallons of water.

The third spraying should follow the second in about three weeks, and should contain arsenate of lead for the codling moth. Use five pounds of copperas, treated as already described, to 100 gallons of water, and arsenate of lead at the rate of four pounds to the 100 gallons. Spray very thoroughly.

The fourth spraying with iron sulphide should be applied about three weeks after the third and be the same strength, but need contain no arsenate of lead unless the orchard has an especially wormy reputation. The spraying should be thoroughly applied.

For bearing trees these four applications should be enough for the year. In the case of young trees the spraying should be continued through the entire growing season at intervals of three to four weeks, but, of course, need contain no arsenate of lead.

The iron sulphide sprayings, as indicated above, will effect a practical control of the mildew under Pajaro Valley conditions, and in all probability in other localities. The trees will not be entirely free from the disease, but it will be held in check to a sufficient extent to allow the development of healthy foliage.

Among the results there many appear certain undesirable ones, such as have already been mentioned. The shedding of some of the young fruit may occur, but our experience would indicate not to a serious extent if the sprayings are applied with sufficient regularity. Falling of the foliage will only occur where the applications are delayed too late or are very irregular.

The woolly aphid may increase to greater extent upon the sprayed trees than on the checks, and may, in some cases require the use of additional measures to subject this insect.

Among the secondary desirable results may be mentioned the probable control of the apple scab and partial control of San Jose and greedy scale.

The black color of the iron sulphide spray mixture has already been alluded to. This color does not remain, but soon turns to a reddish brown, which is not so objectionable. The fact that bearing trees do not have to be sprayed later than the first of July prevents the appearance of any of this deposit upon the ripe fruit.

While we have obtained enough definite information from our experiments

to publish an authoritative statement on the subject, yet there is not the experience of a number of years, which are necessary to definitely establish the value of spraying with iron sulphide as compared with some other forms of sulphur, precipitated sulphur being a case in point. The practice may then change before it is already established. In short, spraying with iron sulphide is offered here as the best means now known to the writer of controlling the powdery mildew.

Do not mix lime-sulphur solution with arsenate of lead. Arsenate of lead may be mixed with iron sulphide provided the precipitate has been properly washed according to directions already given.

Do not start in to spray with sulphur sprays late in the season because of the danger of sulphur injury. Spray early in the season and continue at regular rather close intervals in order to avoid injury by developing sulphur immunity.

Do not expect a very badly mildewed orchard to fully recover the first year, but it may be added that it is not known to what extent an orchard will be improved by spraying for several years.

I also take this opportunity to caution the local growers against the use of any of the several patent remedies and cure-alls that are likely to be offered for sale this season. All of these have been investigated either by us or by the various experiment stations of the United States, and found to have no special value.



## OKANOGAN IRRIGATION AND IMPROVEMENT CO. TO IRRIGATE SIXTEEN THOUSAND ACRES OF LAND

**W**HAT promises to prove one of the largest and best irrigation projects in the State of Washington is being developed by the Okanogan Irrigation and Improvement Company, of which Judge William E. Richardson of Spokane is president, O. N. Suksdorf of Spokane secretary, and Milton N. Rogers of Spokane treasurer. This company has been organized with a capital stock of \$500,000 and has secured water rights for sufficient water to irrigate more than 20,000 acres of land, and has contracted for more than 10,000 acres already in hand on the usual terms of half of the land for water for the other half. The lands to be watered lie in the north central portion of Okanogan County, a district already famous both for quantity and quality of fruit produced, and about twenty miles north of the federal project on Pogue Flat. The water supply is taken from the Sinlahekin and Toats Coulee Creeks, these two streams having a total watershed of several hundred square miles and heading in snow-capped mountains, which insures an ample supply of water until midsummer, after which time water will be supplied from two storage reservoirs, to be filled during the late fall and early spring months. These storage reservoirs have sufficient capacity to supply water for 30,000 acres of land, so it will be seen that any possibility of shortage has been guarded against by the company.

There can be no question as to the desirability of this district, both for fruit culture and as a place of residence. Climatic conditions are as near perfect as it is possible to find them anywhere, the winter temperature in this neighborhood seldom reaching zero and the summer temperature rarely exceeding ninety degrees Fahrenheit. The elevation of Whitestone Flat and Horseshoe Coulee varies between 1,200 and 1,400 feet, while the Okanogan Valley west of the river from Oroville to Tonasket shows an elevation of from 1,000 to 1,200 feet. The soil is for the most part a volcanic ash with clay subsoil, and both water and air drainage are believed to be as nearly perfect as at any other point in the State of Washington.

The main reservoir is located in a chain of lakes about ten miles south of Loomis, in what is known as the Q. S. Coulee, and just south of the point where the Sinlahekin Creek breaks out of the mountains into the valley. This reservoir basin covers 400 acres of water area in Blue Lake, Long Lake and Round Lake. A dam thirty feet in height is to be built at the north end of Blue Lake, the elevation being such that, in addition to the storage of water, these lakes can be drawn down twenty feet by a syphon and still leave a substantial elevation of reservoir above the headgate where water is taken into the main canal. The entire system is by gravity.

The engineering plans have been prepared by George H. Major of Indianapolis, and Mr. Major is at present in the field with a corps of engineers making final surveys preparatory to active work on reservoirs, canals and ditches. The main canal for eleven miles will be twelve feet wide on the bottom, eight feet deep and twenty-four feet wide on top. There will be three auxiliary canals eight feet wide on the bottom and sixteen feet wide on top. There will be a little more than

**NEW POWER OUTFIT.**—After a thorough investigation of methods and machines used in spraying, Fairbanks, Morse & Co. are introducing a new sprayer that merits the consideration of fruit growers. They have succeeded in manufacturing a power outfit very substantial in every respect, weighing only 1,300 pounds, which makes it much easier to handle on loose plowed ground or out on the hillsides. The machine is built very low, the platform being only 4 feet 3 inches above the ground. This enables one to work through the orchard without rubbing against the lower limbs of the trees, which prevents barking the limbs, and during the time of spraying when the fruit is on the trees it does away with a good many apples being knocked off by the spray outfit. The machine is built very compactly and is much shorter in length than the average machine, enabling the grower to turn short and get around conveniently, particularly in an old orchard where the trees are planted very close together. While the engine is one-horsepower, being light in construction it is very effective in connection with pumping and dicing. Fairbanks, Morse & Company guarantee a continuous pressure through two leads of hose of 200 pounds. They feel that they have effected a machine that will meet with practically every requirement of the fruit grower and desire to call the attention of the orchardist to the splendid features of their machine and will be glad to have any one who is interested in power sprayers visit their stores at Portland, Spokane or Seattle, and thoroughly investigate for themselves. Courteous representatives who thoroughly understand the business will be found on hand, who will be glad of an opportunity to explain every feature in connection with power outfits and their advantages.—Contributed.

A REPUTATION TO SUSTAIN

# The Vineland Nurseries

CLARKSTON, WASHINGTON

Has to offer for Spring Delivery, 1911,  
as complete a line of Nursery Stock  
as can be found in the Northwest

All stock propagated from selected bearing trees.

Experts all over the Pacific Northwest realize that no other nursery exercises greater care than we do, and that

No more reliable stock is grown than we produce.

For fall delivery 1911, and spring delivery 1912, we shall have to offer for the first time the

## RED GRAVENSTEIN

*The New Apple Sensation*

Will tell you more about this wonderful apple, which is purely a fortunate accident of nature, later on.

**THE VINELAND NURSERIES CO.** CLARKSTON  
WASHINGTON  
Owners of The Hanford Nurseries

# Not Too Late Yet

If you have been delayed in securing your trees for spring planting we call your attention to the following list, which we have in one-year trees, clean, healthy and O. K. in all respects:

## APPLES

Y. N. Pippin	Winesap	Orengo
Spitzenberg	Stayman Winesap	Baldwin
Jonathan	Grimes Golden	King
Rome Beauty	Winter Banana	Red Cheek Pippin

And many other good varieties

## CHERRIES

Bing	Black Republican	Early Richmond
Lambert	Black Tartarian	May Duke
Royal Ann	Late Duke	And others

## PEACHES

Admiral Dewey	Mamie Ross	Foster
Early Crawford	Muir	Gillingham
Late Crawford	Lovell	Imperial
Elberta	Banner	Orange Cling
Early Charlotte	Champion	

And many others just as good

## WALNUTS

Vrooman Franquette, guaranteed Second Generation. The most successful walnut for the entire Pacific Coast. Literature free.

Full supply of Shade Trees, Rose Bushes, small fruits, etc. Assure yourself satisfaction by patronizing the biggest and best equipped nursery in the West.

**OREGON NURSERY COMPANY**  
ORENCO, OREGON

"Northwest"  
Trees Are Best

"Northwest"  
Trees Are Best

If you are intending to plant Apples, Pears, Cherries, Plums, Apricots, Prunes, Strawberries, Grapes or anything in the nursery line this coming Spring, insist on getting "Northwest" trees. We have all the leading varieties and every tree true to name. Place your order with us and you will get none but the best. *Do it Now.*

# Northwest Nursery Company

G. E. MEARS, MANAGER

Nurseries: Mabton and North Yakima.

Main Office: North Yakima, Washington.

We want a few more salesmen.

three miles of sixty-inch inverted syphon in the main canal from the Sinlahekin source of supply, while the water from Toats Coulee Creek will be delivered to the main canal of the project with about three miles of inverted syphon of the same size.

An unusual feature of this enterprise is a provision of the contract with the land owners which provides that all land when sold by the company will be provided with a perpetual water right, subject only to the necessary maintenance charges per acre, on the plan adopted by the federal government under all its reclamation projects, and the irrigation company assumes all risks for damages from the breaking of ditches or any other contributory cause until the project shall be turned over to a water users' association. The charge for water until the land of

the company is disposed of is fixed at \$2 per acre per annum, and the whole project is one which should appeal to people desiring home tracts for fruit culture. One especially attractive feature is the fact that the village of Loomis, at one end of the project, is a town of substantial size and modern development, with churches and schools, and such other surroundings as to make it a desirable place of residence.

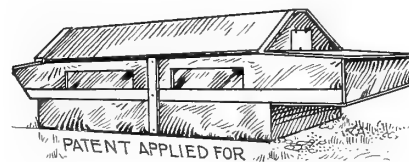
The chief promoter and managing director of the company is A. M. Dewey of Spokane. Mr. Dewey is also vice president of the Spokane, Portland and Northern Railway Company and the Okanogan Electric Railway, two enterprises just about to start construction work and which will afford transportation to the district in which this irrigation project is located. Mr. Dewey is also well known in Eastern Washington as a mining man, being general manager of the Q. S. Mining Company, operating a copper property right at the Blue Lake reservoir of the Okanogan Irrigation and Improvement Company.—Contributed.



Almost the whole world knows of Hood River as a place that produces the best fruits, and all of Hood River Valley should know, and could know, that there is one place in Hood River, under the firm name of R. B. Bragg & Co., where the people can depend on getting most reliable dry goods, clothing, shoes and groceries at the most reasonable prices that are possible. Try it.

**A BARGAIN.**—The Bean Spray Pump Company have one of their 1910 model Giant power sprayers at the Washington State College at Pullman, Washington. This machine has been in use there for demonstration purposes, but has never had anything but water pumped through it. It has been overhauled and put in first-class condition and is for sale at a bargain. This company can also make prompt shipments of 1911 model Giant power sprayers out of Spokane, Washington. For further particulars address Bean Spray Pump Company, San Jose, California.

## CHANTECLER COLONY COOP



PATENT APPLIED FOR

A BOY CAN BUILD IT

The best all-season coop in the world. Warmest in winter—coolest in summer; perfectly ventilated; moisture never collects inside. Easily cleaned and sprayed in every part. Convenient size to be carried by two men or moved on runners. Chickens should have frequent change of ground, so as to avoid soil contamination. In the Chantecler Colony Coop chickens are properly housed, fed, cared for and trap-nested, thus insuring accurate records for laying and breeding purposes. This coop can be built by anyone, from blueprint plan and specification. We refund money if not as represented. Write today for literature.

Complete Plans and Specifications \$10

**Chantecler Poultry Farm**  
310 East 15th South  
SALT LAKE CITY, UTAH

FOR SALE—Day-old chicks from Chantecler Colony Coop, trap-nested S. C. Rhode Island Reds, 50 cents each.

HIGHEST QUALITY  
**SEEDS AND SUPPLIES**

Send for our handsome 104-page catalog. It tells about the right stock for this Coast. It is compiled and written by a man who knows. His twenty years' experience here enables him to do this and do it right. Some Eastern catalogs are more elaborate, but they are Eastern guides, not Western. Understand!

**ROUTLEDGE SEED & FLORAL CO.**

169 Second Street  
Portland, Oregon



AS IT COMES FLAT

# "Save-Time"

SIMPLY PERFECT

## Folding Berry Box

Made from Pacific Coast Spruce



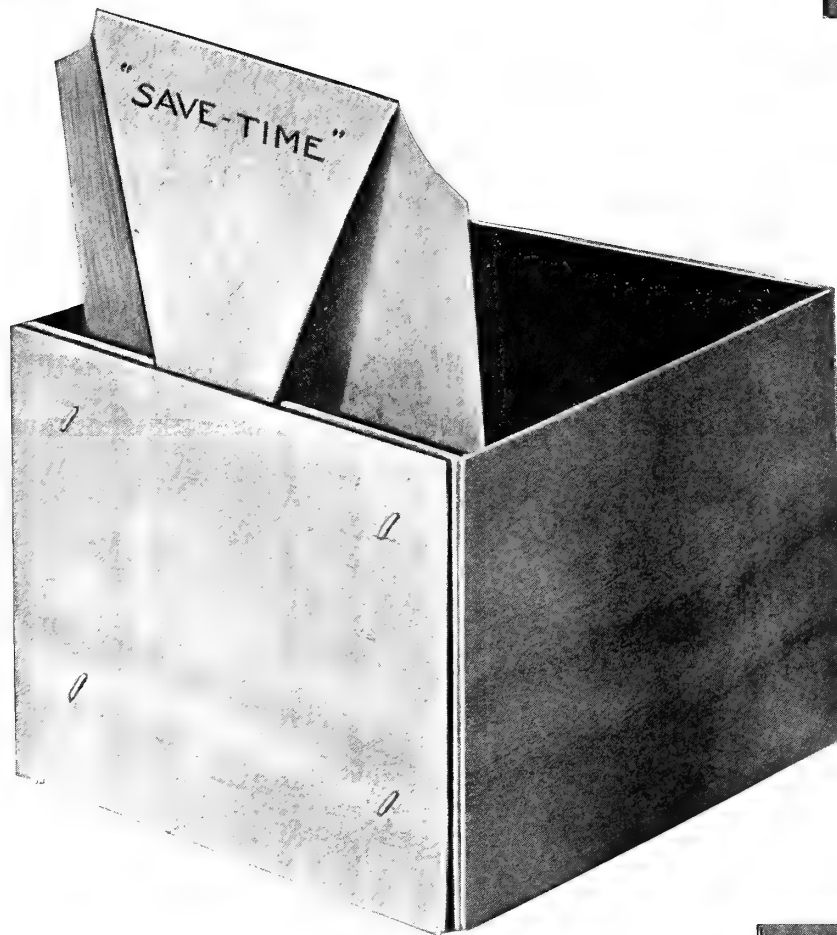
AS IT OPENS

DON'T STAPLE  
SAVE YOUR TIME  
WHEN YOU  
NEED IT

PICKERS WILL  
SET UP THIS BOX  
IT IS SO EASY

PACKED  
THREE BUNDLES  
TO A  
THOUSAND

ASK YOUR  
DEALER OR WRITE  
OUR AGENTS  
OR US AND DO IT  
EARLY



EASILY MADE UP

NO BREAKAGE  
OR WASTE

SOLID ONE-PIECE  
BOTTOM

VERY RIGID

NO STAPLES  
IN CONTACT WITH  
CONTENTS

REMAINS IN  
PERFECT POSITION

AS IT FASTENS DOWN

MANUFACTURED BY

### Pacific Fruit Package Co.

Raymond, Washington

H. B. HEWITT, Pres. and Treas.

J. H. HEWITT, Vice Pres.

O. C. FENLASON, Sec. and Mgr.

Agents Portland, Oregon, Territory:

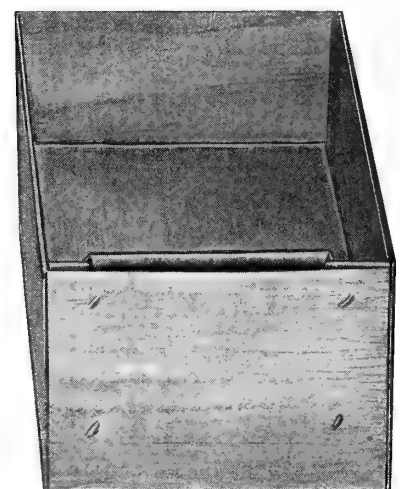
STANDARD BOX & LUMBER CO.

East Pine and Water Streets  
PORTLAND, OREGON

WASHINGTON MILL COMPANY

Agents Spokane Territory

Spokane, Washington



AS YOU FILL IT

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

# ANTHRACNOSE OF BLACKBERRY AND RASPBERRY

BY W. H. LAWRENCE, WESTERN WASHINGTON EXPERIMENT STATION, PUYALLUP, WASHINGTON

FOR several years the Snyder blackberry, which is grown extensively throughout the Puget Sound country, has not been producing good returns on account of a greater or lesser per cent of the fruit failing to develop properly for shipping or canning purposes. At the request of Mr. W. H. Paulhamus, president of the Puyallup and Sumner Fruit Growers' Association, the writer made a study of the trouble. The cause of the trouble and the method of preventing it have been determined. An account of the investigations, with recommendations, are herein given.

The disease, which is commonly known by the popular name of anthracnose, is caused by a very small form of fungus (*Gloeosporium venetum*), consisting of two parts—the mycelium and the spores. The way in which the fungus passes the winter is not known. It probably lives in the canes and fragments of leaves that remain in the field after pruning is done. From field observation on the blackberry, the disease attacks the stems, leaves and fruit during the spring. The spread of the disease is caused by the distribution of the spores. Some of the spores lodge on the host plants. When the climatic conditions are favorable the spores germinate and form the mycelium, which penetrates the tissue of the stems, leaves and fruit, causing spots on them. The mycelium soon gives rise to a large number of short branches just beneath the thin outer coat (epidermis). Spores are borne on these branches. When they form they cause the epidermis to break

open. These spores are held together by a mucilaginous substance, which is soluble in water. In the presence of moisture the spores are set free and are carried about by the wind and other agents. Some of them are sure to lodge on the various parts of the host plant.

Among the varieties of blackberries the Snyder, Kittatinny and Himalaya Giant are attacked. The Lucretia dewberry is also susceptible, while the Loganberry is by no means free from the disease. Of the red raspberries the Antwerp is injured to a considerable degree, while the Cuthbert is but slightly affected. The Cumberland black raspberry and the Antwerp are equally affected.

Anthracnose attacks the leaves and stems of the Antwerp. The spots on the leaves are few and small, but not unlike those of the blackberry in general appearance. Those on the canes vary in size from minute dots to more than one-sixteenth of an inch in diameter. A majority are well developed. They are much more conspicuous than the spots on the canes of other plants mentioned. The central portions are light grey to white in color, the margin a reddish brown to almost black in color, while the infested area is shrunken, extending the greater part of the way through the bark. When they are abundant and close enough together so that they merge large irregular cankers are formed. The disease is more abundant in old fields, where it usually does much damage.

The Cuthbert is only slightly susceptible to the disease. Only a few canes

were observed with spots on them. A very few diseased leaves were collected. The spots are not unlike those on the leaves and canes of the Antwerp.

The Cumberland black raspberry, in some fields, is also badly infested with the disease. It is not unlike the same disease on the Antwerp in its general appearance and effect on the plants.

An examination of the whole plant (a hill), late in the summer, shows that not all parts of the Snyder are attacked. No new spots appear on the canes which bear the crop of fruit or the branches produced during the first season. New ones are more or less abundant on the fruiting laterals which are produced the second season. All the leaves may be infested—those on the lower fruiting laterals and on the main cane, and its branches particularly so. The shoots (new canes or current year's growth) are usually well covered with spots from a few inches from the base to a height of three to four feet. The smaller and younger spots are at the upper end. All of the leaves are usually also badly infested. Laterals on the new canes are free from the disease, except at the very base. The leaves on these laterals do not become infested.

1. Disease in the Stem—The spots in the stems are found to be elliptical

## FOR SALE

Choice ten-acre tracts Okanogan fruit land. First-class upper bench, near government canal; 1,280 feet altitude. Well water in gravel, thirty feet, pure. Planted to yearling apple trees; best red winter commercial varieties; also tracts not planted. Ready to irrigate. Great Northern Railroad now building in Okanogan Valley. Prices and terms right.

W. E. KIRKPATRICK  
Epley, Wash. Okanogan County

## We Raise the Big Red Apples

I have land for sale in the beautiful Mosier Hills, just six miles east of the town of Hood River, Oregon.

I have the exclusive sale of the East Hood River Land Company's lands.


Some choice tracts in one to three-year-old orchard.

I have had fifteen years' experience in the Mosier district and I have on my list the best buys in this district.


GEO. CHAMBERLAIN  
Mosier, Oregon

## FARM WANTED

Forty acres or more (Oregon, Washington or Idaho). From five to fifteen acres orchard. Suitable house, barns, fences, etc.; good quality drinking water. Must be under irrigation ditch. State elevation and full particulars to J. M. HARRIS, 532 West 111th Street, New York City.



# VIRGINIA FRUIT LANDS



### \$15 to \$50 per acre

Will buy land in the Beautiful Shenandoah Valley that will grow better fruit than can be grown on \$100 to \$200 land elsewhere.

**Close Markets and Low Freight Rates**

Give us a great advantage. Fast freight shipments reach New York in 24 hours. Rate 10 cents per box on apples.

**The Virginia Apple Orchard is a Money Maker**

You can grow apples here at lower cost because nature provides abundant rainfall, and our mild climate, rich soil, cold mountain water, good schools, good roads and best social environment make life very attractive to the newcomer.

Virginia harvested a \$3,000,000 apple crop in 1910. We have high grade apple lands in the Shenandoah Valley, near railroad and good towns, at \$15 per acre and up in small tracts. Large boundaries as low as \$10 per acre.

Write for attractive booklet, complete list of properties and copy of our Homeseekers' Guide.

F. H. LA BAUME, AGRICULTURAL AGENT NORFOLK & WESTERN RAILWAY, ROANOKE, VIRGINIA



in shape and have somewhat irregular margins. They vary in size from less to three or four times larger than a pin head—usually about twice as large. The center is a light grey to nearly white in color, while the margin is a deep

brown. When these spots are mature in size they are sunken, and oftentimes split open lengthwise with the cane. They usually extend nearly through the bark. When abundant irregular patches of considerable depth are formed, which act as a partial girdle on the stem.

2. Disease on the Leaves—The spots in the leaves are round, and smaller than those in the canes—usually about half as large as the head of a pin. The centers are nearly white in color, while the borders are wider and of a reddish-brown color. These spots usually extend through the leaf, and when they are abundant run together, forming large patches. These dead areas drop out, leaving holes or slits in the leaves, causing them to appear as if whipped by the wind. The injury done the stem and leaves is very little as compared with the injury done the fruit.

3. Disease on the Fruit—During the season, the latter part of which is unusually dry, on the fruit which is constantly shaded the disease is most abundant. The upper drupels of the berries are also more often attacked. The diseased drupels also usually occur in clusters. The disease may attack the fruit at any stage of its development. The greater number become infested while yet green in color, and sometimes when no larger than a pea. When the fungus attacks the fruit it usually finds an entrance in the outer end of the drupel, usually near the style of the pistil. There is seldom more than one spot on a drupel. From one to many drupels may be infested. Sometimes every drupel on a fruit becomes infested. Evidently on some fruits the infection takes place on nearly all the drupels at the same time, as the spots are all about the same size and equally well developed. On other fruits

the observations made seem to indicate that infection may spread from one drupel to another, since on some badly infested fruits the oldest infested drupels are at the center of the group. This seems to be true only for the more mature fruits. If this is true the infections comes from spores produced on the drupel, and not from the fungus growing from one drupel directly through into another. The fungus matures spores on some of the infested drupels by the time they are about to turn from green to red.

When young drupels become infested a small brown dot appears on the surface on the end. These areas increase rapidly in size and soon involve the entire surface. In the meantime the infested portion stops growing, the surface becomes rough and marked with nearly white lines, caused by the epidermis splitting open. As the fruit matures and the amount of water increases in them the infested areas become more or less shrunken. The spot becomes deeper brown in color. The center of each may become white owing to the development of masses of spores. At this stage the fruit is nearly red in color and the spots are very conspicuous. Infested drupels on a well matured fruit are of a dull reddish-brown color. As the drupels mature the proportion of water in the berry increases very greatly. If infection has taken place early in the season, while the drupels are small and do not contain much water, they will remain firm, and finally become dry. In

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread

## FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

### BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

Bridal Veil Lumbering Co.  
Hood River, Oregon

## W. F. LARAWAY

DOCTOR OF OPHTHALMOLOGY

EYES TESTED  LENSES GROUND

Over 30 Years' Experience

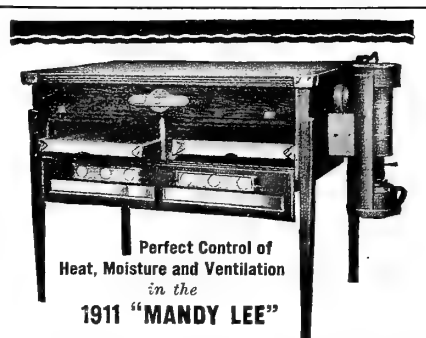
Telescopes, Field Glasses  
Magnifiers to examine scale

Hood River Oregon and Glenwood Iowa

## Market Gardeners' Paper

Weekly Market Growers Journal—only paper printed especially for vegetable growers. \$1.00 a year, 52 issues. For 10 cents and names of three market gardeners we will send it ten weeks with our popular booklet, "\$25,000 a Year From Twelve Acres." Send for free sample copies—it is the best way to judge.

MARKET GROWERS JOURNAL  
546 Walker Building, Louisville, Kentucky



Perfect Control of  
Heat, Moisture and Ventilation  
in the  
1911 "MANDY LEE"

Investigate the "Mandy Lee" right now and send in your order early, for no other incubator will satisfy you when you know the points of superiority of the "Mandy Lee." The factory could not fill all orders last season.

Life-giving Oxygen is supplied freely at the egg-level without losing the moisture so necessary at all times and imperative when the chicks are coming out. No other Incubator on the market gives this important advantage.

Complete Catalog No. 202 and Lee Booklets free.  
Send Now. Be in Time.

PORTLAND  
SEED COMPANY  
PORTLAND, OREGON



YOU'LL have greater success with your spraying and a better profit in your fruit crop if you use

## Devoe Arsenate of Lead

made in powder or paste form, equally effective; very adhesive, and will not injure the foliage; reliable in every way.

## C. T. Raynolds Paris Green

Is certain cure for the potato bug pest. Devoe Lime and Sulphur Solution is a fungicide that is effective.

See that your dealer supplies you with these Devoe preparations.

DEVOE & RAYNOLDS COMPANY  
CHICAGO

New York Kansas City Denver

case infection takes place when the drupels contain a considerable amount of water, however, they will crush very easily. Fortunately late infection is rather rare, as far as our observations go. A greater number of drupels on ripe fruit are dry enough so that they do not injure the shipping quality of the fruit. When the drupels become infested the growth is only partially arrested. They continue to grow at the base, and partially mature, but do not form a saleable berry.

The disease attacks the Kittatinny the same as described for the Snyder.

Of the Himalaya Giant the leaves are the only part of the plant that is susceptible. The spots are larger and more conspicuous than on the leaves of the other blackberries.

The anthracnose on the dewberry (Lucretia) differs somewhat in general

appearance and action from the same disease on the blackberry. The fruit very rarely becomes infested, while the disease is very marked on both the leaves and stems. The shoots, as well as the canes, are badly infested on the stem, from a few inches from the ground to a height of two or three feet. There are few or no spots on the upper ends of shoots. It is also noticeable that the laterals of young shoots are seldom attacked. When so the spots are very few in numbers, and only grow to be about one-third as large as the spots on the main stem. On the old shoots all the leaves become badly infested, while on the new ones the stalks of the leaves may become well covered with spots, while the blades are entirely, or nearly, free from them.

The spots on the canes are sometimes so numerous and close together that they merge, forming large irregular patches. As a rule, however, they are well scattered. They are about two or three times as large as a pin head, round or oblong in shape, and somewhat depressed. The dead bark in these spots is nearly white in color, and each is surrounded by a reddish-brown ring. Even the very small areas, when viewed closely, show the white center and red ring. These spots on the bright green stem give the stalk a very conspicuous speckled appearance. On the leaves the spots are even more conspicuous than on the stems. On the more healthy leaves the young spots are minute and reddish-brown, without a white center. These older spots are markedly conspicuous on badly infested leaves that have become light yellow in color. This variety of berry plant is injured greatly by the disease.

Diseased fruit was taken from the field and cultures made of all the bacteria and fungi found growing on it. The forms isolated (with the exception of the form, the spores of which resembled the spore of the fungus causing the disease of the stems and leaves, known as anthracnose) grew readily, and were soon available for inoculation purposes. In making the inoculation the same plans were followed as described for inoculation with anthracnose, as explained below. Pure culture of these organisms did not produce the disease on the fruit in a single instance.

Owing to the nature of the growth which anthracnose makes in culture media spores cannot be obtained in quantities for inoculation experiments. Cultures of spores from the stems, leaves and fruit, however, produced the same identical growth, showing that the spores are those of the same fungus. Since the culture gave evidence that anthracnose occurs on the fruit inoculations were made, as described below.

Diseased berries in different stages of maturity, from green to ripe, in which spores of the fungus had not developed, were collected, immersed in fifty per cent alcohol for a few moments, after which they were thoroughly rinsed in sterilized water to remove the alcohol. These berries were then placed in moist chambers. In these cultures the fungus in the fruit grew from the infested areas in tufted areas and in tufts, arranged in

circles around the central portion of the diseased areas, and in some cases the rings were continuous, since the tufts were so numerous that they merged. The growth of the fungus in these cases can only be determined by using a lens, since the growth under the naked eye

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

**HOOD RIVER  
MILLING CO.**

C. M. SHAW

ROY F. DEAN

*Dean & Shaw*

Electrical Supplies and Fixtures  
Scientific Electrical Construction

Home Phone 3 Hood River, Oregon

## John B. Cancelmo

WHOLESALE DEALER IN

**FANCY  
BOX APPLES**

127 Dock Street

PHILADELPHIA, PA.

## STORAGE

Ship your Furniture to us  
to be stored  
until you are located

**Transfer & Livery Co.**

Hood River, Oregon

## D. McDONALD

Hood River, Oregon

Headquarters for

**FARMING AND ORCHARD**

**TOOLS**

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best

J. M. Schmeltzer, Secretary

**Hood River Abstract Company**

Hood River, Oregon

**ABSTRACTS INSURANCE  
CONVEYANCING**

## Rogue River Fruit and Produce Association

C. W. WILMEROTH, Manager

Main Office, Medford, Oregon

We will distribute the entire output of the  
Rogue River Valley—The world's most famous  
pears—Our Spitzenbergs won first prize  
in 1909—We use the Revised Economy Code

Loading Stations

Ashland, Medford, Grants Pass, Eagle Point,  
Gold Hill, Central Point, Talent, Woodville,  
Phoenix, Voorhies, Merlin and Jacksonville.

## WHAT \$100 WILL DO FOR YOU IN TEXAS

It will buy one gold bond bearing eight per cent interest and \$50 stock in new company and one town lot in Aldine, near Houston, the greatest city in the Southwest. Terms either cash or monthly. Full particulars free. Address E. C. Robertson, general sales manager, 501 Kiam building, Houston, Texas.

## S. E. Bartmess

UNDERTAKER AND  
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

**Hood River, Oregon**

appears very much like a white residue of some salt deposited by the evaporation of water in which it occurred in solution. The study of the fungus must be brief, since the threads collapse very quickly in a dry atmosphere.

On July 20th short fruiting laterals, with apparently healthy berries, were placed in water to keep them fresh. Small drops of water were placed on the drupels and spores of the fungus from diseased fruit were placed in them. At the end of fifteen hours some of the drupels, mature enough to turn black in color, showed signs of the disease. Other and younger drupels showed signs of the disease in twenty-four to forty-eight hours. About one-fifth of the inoculations took effect.

On the 26th day of July fruiting laterals from a patch of Snyder blackberries that had not begun to blight were placed in bottles containing water to keep them fresh. Each brand had berries in various stages of maturity, from green to ripe. Drops of water were placed on the berries, and spores taken from spots in the leaves and stems of diseased Snyder plants were placed in them. At the end of a week, when the fruit had become slightly wilted, numerous spots were found on the fruit in all degrees of maturity. From the general appearance of these spots, and their effect on the fruit, it is evident that a majority of the spots on the fruit took effect shortly after the spores were placed in the water.

In spraying potassium sulphide (one ounce to two and one-half gallons of

water), copper acetate (one ounce to eight gallons of water), ammoniacal copper carbonate (one ounce to sixteen gallons of water) and bordeaux mixture were used in the preliminary tests. The object in using the former was to test the value of such sprays as would not leave a residue on the fruit. Poor results were obtained with all sprays except bordeaux mixture. Copper sulphate, four to six pounds; lime, four pounds; water, fifty gallons.

Bordeaux mixture is composed of a number of chemical compounds formed when solutions of bluestone and milk of lime are poured together. The chemical changes which take place are delicate, and in order that they take place correctly the solutions must be diluted, and great care must be exercised in mixing. The method of mixing, as well as using dilute solutions, not only has an important bearing on the chemical, but also on the physical nature of the mixture. The most valuable compound formed, and the one which is easily modified in the mixing, is a bluish, gelatinous substance that

has about the same specific gravity as the fluid in which it is suspended. Of the different methods tried the following has given the best results, and is the only one recommended:

**Bluestone Solution**—To prepare this solution the bluestone can be dissolved very quickly in a small amount of boiling water. Place the bluestone in a wooden vessel and pour the boiling water over it. Pour the strong solution in a barrel and add enough more cold water to make twenty-five gallons. The solution may also be prepared by placing the bluestone in a closely woven sack that will not lint

## J. F. LITTOOY

CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO

LESLIE BUTLER, President  
F. McKERCHER, Vice President  
TRUMAN BUTLER, Cashier

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000

Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

**We Give Special Attention to Good Farm Loans**

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

CAPITAL STOCK \$100,000 SURPLUS \$20,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, President  
J. W. HINRICKS, Vice President  
E. O. BLANCHARD, Cashier  
V. C. BROCK, Assistant Cashier

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

Savings Bank in connection

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - \$1,000,000  
Surplus and undivided profits - - - \$600,000

W. M. Ladd, President  
Edward Cookingham, Vice President  
W. H. Duncley, Cashier

Officers:

R. S. Howard, Jr., Assistant Cashier  
J. W. Ladd, Assistant Cashier  
Walter M. Cook, Assistant Cashier

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

HOOD RIVER BANKING AND TRUST COMPANY

HOOD RIVER, OREGON

# V "Diamond Quality" Vegetable Seeds for 1911



Our complete New Seed Annual and Planter's Guide specially prepared for Northwestern growers—fully illustrating and presenting newest, most profitable varieties for market-man or home garden is **NOW READY FOR YOU**

**The One Catalog for the Careful Buyer**

**OREGON POLE LIMA** is the most hardy and prolific and the most delicious of all beans. *The only Lima that will thrive in the Northwest.* Trial packet **10c.** Regular—40 seeds, **25c.**

**Latest and Best Equipments for the Farmer, Orchardist Poultryman and Beekeeper**

Our **Diamond Trade Mark** is a guarantee of **Quality, Satisfaction and Full Value**, backed by twenty-five years of success right here in the Pacific Northwest. Our Catalogs are Complete Buyer's Guides. **Free on Request.**

Ask for our Catalog No. 200

**Portland Seed Co.**  
**Portland, :: Oregon**



and suspending the same from a stick laid across the top of a barrel, so that the bluestone hangs just beneath the surface of the water in a well filled barrel. When the bluestone is all dissolved remove the sack and add enough more water to make twenty-five gallons of bluestone solution.

**Milk of Lime**—To prepare the milk of lime place four pounds of good quick-lime (preferably large pieces) in a wooden vessel. Add enough water to wet it thoroughly. When it begins to dry and crumble add more water. Be careful not to add enough to chill it or too little so that it will burn. When the lime has formed a good paste, and is still slaking slowly, allow the slaking to continue and the paste to cool before adding more water. If this method is followed a smooth paste, free from grit and small lumps of lime, will be obtained, provided a good quality of lime has been used. Mix the paste thoroughly with twenty-five gallons of water.

To mix the solutions of bluestone and milk of lime two men are required to do the work. Pour the two solutions slowly in such a manner that they mix in falling. If the solutions fall some distance the churning motion caused by the falling column of water aids in mixing. After the solutions have been poured together stir the bordeaux thoroughly, using a wide wooden paddle. After straining the mixture is ready for use.

The spray should be tested to see if enough lime has been used to unite with all the bluestone. Partly fill a shallow dish with the bordeaux mixture and add a few drops of a solution of ferro cyanide of potash (one ounce to half pint of water). If a reddish-brown color appears add more lime paste, stir thoroughly and test a second time. Continue to add small amounts of lime paste until the reddish-brown color fails to appear when the test is made.

When a large quantity of the mixture is needed mixing is greatly facilitated by preparing stock solutions of both the lime and the bluestone. The best mode of preparing these is to partly fill a barrel with water and suspend in it one hundred pounds of bluestone. When this has dissolved remove the sack and add enough water to make fifty gallons. You have then a solution in which two pounds of bluestone are dissolved in each gallon of water. Prepare a barrel of milk of lime in the same manner explained for slaking the lime. When this lime solution is stirred thoroughly each gallon of water contains two pounds of lime. To make fifty gallons of the bordeaux mixture measure out three gallons of the bluestone solution and add enough water to make twenty-five gallons. Measure out two gallons of the milk of lime and add enough water to make twenty-five gallons. Stir thoroughly, pour the two solutions together, stir, test and strain, following closely the directions given above.

In applying the spray begin at the top of the plants and work downward, giving the canes a thorough coat and wetting the entire surface of every leaf. Do not use too much spray or it will collect in

## Heavy Fence For Economy

**W**OVEN-WIRE FENCES must be heavy as they have to turn animals by sheer strength of the wire. A fence with barbs is protected from excessive pressure because the animal fears the barbs. Remove the barbs and the greatest strength of the animal is thrown upon the fence. Its wires must be larger and stronger. To have a long-life woven-wire fence the fence must be heavy.

## AMERICAN FENCE

is a thoroughly galvanized square mesh fence of weight, strength and durability. Large wires are used and the whole fabric is woven together with the American hinged joint (patented)—the most substantial and flexible union possible. Both wires are positively locked and firmly held against sideslip and yet are free to act like a hinge in yielding to pressure, returning quickly to place without bending or injuring the metal.

**Dealers Everywhere**—Stocks of American Fence are carried in every place where farm supplies are sold. The Fence is shipped to these points in carload lots, thereby securing the cheapest transportation, and the saving in freight thus made enables it to be sold at the lowest prices. Look for the American Fence dealer and get the substantial advantages he is enabled to offer. He is there to serve the purchaser in person, offer the variety of selection and save the buyer money in many ways.



**FRANK BAACKES, Vice President and General Sales Agent**

**American Steel & Wire Company**

Chicago

New York

Denver

San Francisco

Send for copy of "American Fence News," profusely illustrated, devoted to the interests of farmers and showing how fence may be employed to enhance the earning power of a farm. Furnished free upon application.



# Telling The Truth Is Not Knocking

## SCIENTIFIC PRINCIPLES of The BOLTON

The Bolton is the only orchard heater built on scientific principles. By a patented device the flame is deflected sideways in all directions. This reduces the force of the flame, making a hot but gentle fire that causes no cold drafts of air. Thus the atmosphere is heated as the sun's rays would heat it, and rises naturally, without commotion or force. The heat is spread in every direction and the heaters are placed close enough together to form an unbroken blanket of protecting heat. The Bolton makes a small fire and 100 to the acre is scientifically correct. A large or roaring fire renders less protection and causes a rush of cold air.

Surely a plain statement of facts cannot possibly be called mud-slinging. The figures printed below are a matter of public record. They cannot be side-stepped—they are facts. We quote them for the benefit of the grower. He is the one most concerned, and he wants to know just the things such figures reveal.

Our agent at Clarkston, Washington, had repeatedly offered to supply the necessary oil if the Troutman agent would pit his heater against the Bolton in a public competitive demonstration. For some reason the Troutman agent has not consented to such test. The Hamilton agent was finally persuaded to hold a demonstration, conducted by W. B. Lanham. Results showed that the Bolton burned two and one-half times as long as the Hamilton on the same amount of oil. Four hours after lighting the Hamilton heaters were all burned out. Eight hours after lighting 70 per cent of the Bolton heaters were still burning briskly.

These tests, Mr. Grower, have been held at the instigation of some grower, county or state officer—or ourselves. The manufacturers of other heaters have not as yet accepted our standing challenge to a competitive demonstration with the Bolton. One did accept, but we have never been able to get an answer to our letter to him written January 9th asking where and when we should meet him. There's no bluff about our challenge, and some are finding this out.

On February 1st we sent the following telegram to the Hamilton Orchard Heater Company:

**"Challenge you to competitive demonstration, your competitive pot against our Bolton, Washington or Oregon. Wire tonight at our expense."**

So far we have received no reply. Why is this, Mr. Grower?

Let us give you a demonstration of the Bolton in your own orchard. See for yourself what the Bolton can do. Have other heaters there to compete against us if you wish—we would like it all the better. Our men are in the field constantly and can get to your place quickly.

Write to our nearest agent—or wire at his expense if you need heaters in a hurry. And here's another point. We can make immediate delivery. You may be willing to wait for heaters to come by slow freight from the Atlantic Coast, but Jack Frost is not as accommodating as you are.

**FROST PREVENTION CO.**  
BALBOA BUILDING, SAN FRANCISCO, CALIFORNIA

Grants Pass, Oregon, George Parker, Agent  
Clarkston, Washington, Evans Mercantile Co., Agent

large drops and run off, and much of the value of the application will be lost.

Spraying experiments were conducted in co-operation with J. P. Gish and J. S. Friedley at Puyallup, and G. J. Anderson, Orton Bros. and W. H. Paulhamus at Sumner. Results have not been as gratifying as was hoped for, but are good enough to encourage the use of bordeaux on an extensive scale.

In experiments in the Gish berry field, 1907, four rows of Snyder blackberries, each about three hundred feet in length, were sprayed twice with 4-4-50 bordeaux. The first application was made on May 4th, at which time the plants were nearly in full leaf. The second application was made on May 21st, just before the blossoms opened. Four rows of the same length were left as checks.

During the season, at three separate pickings, the fruit was sorted. This work was personally attended to by Mrs. J. P. Gish. At the first picking two crates from sprayed rows gave three-fourths of a box of blighted berries. The same number of boxes from rows that had not been sprayed gave one and one-half boxes of blighted berries. At the second picking there were ninety boxes on each of the sprayed and check portions of the field. Three-fourths of a box was discarded from the sprayed lot and five boxes from the check lot. The third time the fruit was counted twelve boxes from check hills gave one hundred and ninety-five blighted berries, and the same number of boxes from sprayed hills gave only

thirty blighted berries. Sprayed portions gave, per picking, in order named: 1.5, 0.8, 1.0 per cent blighted fruit. Check rows gave 3.0, 5.5, 8.0 per cent blighted fruit. Shortly following the spraying the

foliage of plants grown on sandy loam soil on sprayed rows, for a time, was a much deeper green than check rows. At picking time this difference was barely noticeable. The beneficial effect of spray-

## THE TOOL that SAVES a TOOL

### What Prof. Bailey Says

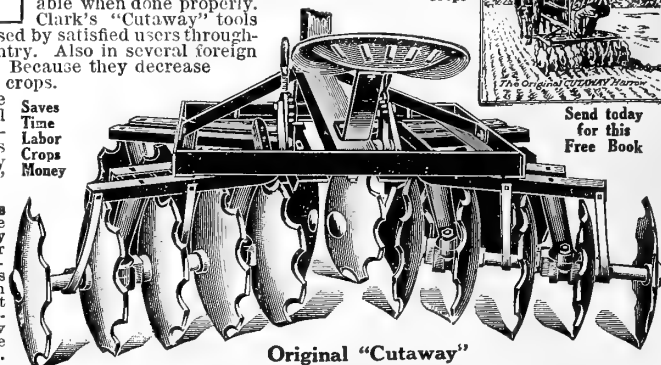
"The Double Action 'Cutaway' Harrow has been satisfactory. I use it almost continuously on our hard clay land with good results."

are used and endorsed by satisfied users throughout this entire country. Also in several foreign countries. Why? Because they decrease labor and increase crops.

Our disks are made of cutlery steel shaped and sharpened in our own shops and are the only genuine "Cutaway" disks.

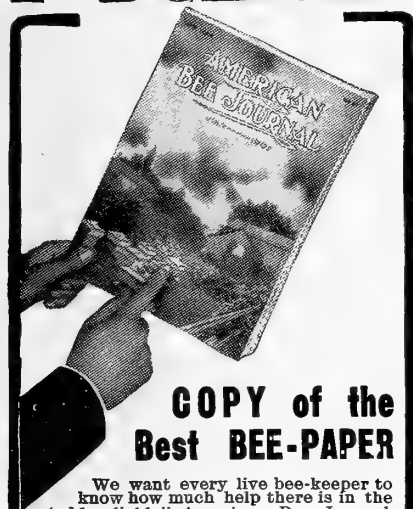
Beware of imitations and infringements. We make a tool for every crop. If your dealer can't supply the genuine "Cutaway," write us your needs. Satisfaction guaranteed. Prompt shipments. Send a postal today for our new catalogue "Intensive Cultivation." It's Free.

Why buy two tools when one will do two kinds of work and do it better and easier? Clark's original "Cutaway" Harrow can be used as a field harrow and its extension head frame converts it into an orchard harrow. Drawn by two medium horses and will cut 28 to 30 acres or double cut 15 acres in a day. The genuine "Cutaway" disk slices, stirs, lifts, twists and aerates the soil. Working the soil this way lets in the air, sunshine and new life and kills foul vegetation. Thorough cultivation makes large crops. Successful farmers, orchardists, gardeners and planters know that intensive cultivation is profitable when done properly.



**CUTAWAY HARROW CO., 940 MAIN STREET, HIGGANUM, CONN.**  
Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon

# FREE!



## COPY of the Best BEE-PAPER

We want every live bee-keeper to know how much help there is in the "old reliable" American Bee Journal. It is now the brightest, cleanest, newsiest monthly bee-paper published. We want everyone interested in bees and bee-keeping—beginners or experts—to write for a free copy of the

### AMERICAN BEE JOURNAL

Then you will appreciate what a big help it will be to you in keeping bees. Experienced talks by expert bee-men; answers to questions about everything pertaining to bees; special department for women who keep bees; a paper that you'll learn to look for every month.

AMERICAN BEE JOURNAL  
Chicago, Illinois

ing on the leaves was not noticed on plants growing in heavy soil. The fruit, however, on sprayed rows was larger and more glossy. There were among the unsprayed berries many that only had a spot or two of late infection that were not considered blighted, but which were detrimental to the general appearance of the fruit. There were a few late infections on the sprayed berries. The blight increased during the season.

In experiments in the Orton Bros' berry field, 1907, the blackberries consist of Snyder and Kittatinny. The greater portion of the plants are of the Snyder variety, with scattering hills of the latter variety. For two years the Kittatinny had blighted much worse than the Snyder. In 1906 the field, with the exception of parts of three rows, each eight hills long (rows seven feet apart, six feet apart in the row, hill system) were sprayed twice with 2-3-50 bordeaux mixture on June 1st and 10th. When the berries were gathered those from rows which were not sprayed showed two to three times more disease than the fruit from sprayed ones.

During 1907 some of the rows were sprayed with 6-4-50 bordeaux just before the leaf buds opened (last of March to first of April). Later, and just before the flower buds opened (about May 1st) a part of the rows were sprayed a second time with 4-4-50 bordeaux. During the season no injury from the spray was noticeable, nor was there any beneficial effect on the plants other than the reduction of the amount of disease on stems,

leaves and fruit, with the exception that the fruit on rows sprayed twice began to ripen a little earlier in the season.

Twice during the season a portion of the picking was sorted. Twelve boxes were picked from each of a check row, a row sprayed once and a row sprayed twice. The check rows (two) gave an average of twenty-one per cent blighted fruit, the row sprayed once seven per cent blighted and the row sprayed twice two and five-tenths blighted fruit. About two weeks later a similar examination and count was made. The check row gave thirty-seven per cent blighted, row sprayed once sixteen per cent blighted and row sprayed twice gave eight per cent blighted.

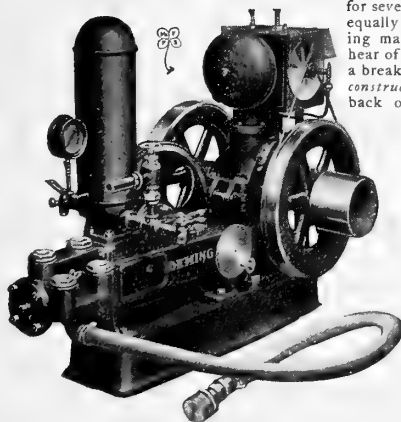
These figures show that two sprayings reduced the amount of blight more than two-thirds.

In experiments in the Anderson berry field, 1907, at two dates during the picking season a small amount of the fruit was gathered and sorted from rows that had not been sprayed, rows sprayed once and rows sprayed twice. 4-4-50 bordeaux was used. The first application was made when the plants were well leafed out and the second about three weeks later, before the blossoms opened. The first sorting of fruit showed thirty-four per cent blighted fruit on check, twenty-five per cent on rows sprayed once and sixteen per cent on rows sprayed twice. A second picking, a couple of weeks later, gave fifty per cent blighted on check, thirty-three per cent blighted on rows sprayed once and

## Deming Sprayers Do Good Work One 1910 Record That Proves It

When we tell you that Deming Spray Pumps are doing good work, and lots of it, and doing it thoroughly, we say so because we know it to be a fact, and to prove it we refer you to the record made by a Deming "Premier" Power Sprayer, Fig. 656, in the orchard of a customer in Washington. It helped him to produce a 100% perfect apple crop, and enabled him to cover 10 acres of 4-year trees in 7 hours, with 700 gallons of spray, and 10 acres of 12-year-old trees in 40 hours, with 5,700 gallons. This man made a real record with his

## Deming Spray Pump



for several good reasons that must appeal equally to you. For instance, every Deming machine is reliable; you don't often hear of Deming users being thrown out by a break-down. Then there's the splendid construction of the Deming machines, and back of the construction, the design—every Deming outfit was planned by men who know what modern fruit growing methods demand of a successful machine.

We want you to have our Catalogue NOW, and to know more about the Deming line. If your local dealer cannot supply you, we will sell you direct. Write us today—we will see that you get full particulars by return mail.

First prizes were awarded Deming "Century" Barrel Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November 10-19, 1910.

### CRANE CO., Pacific Coast Agents

Portland Seattle Spokane San Francisco

THE DEMING COMPANY, 870 Depot Street, Salem, Ohio  
Distributing Agencies in Principal Cities  
MANUFACTURERS OF PUMPS FOR ALL USES



H. C. POOR,  
Redlands, Cal.  
Champion Box Maker  
of the World.

W. H. Bentzen  
Manager  
San Monte Fruit Company  
(Incorporated)  
Apple Packers and Shippers  
Watsonville, Cal.

(COPY)

Mr. A. C. Rulofson, Pacific Coast Agent,  
J. C. Pearson Company,  
San Francisco, California.

Dear Sir:—

Replying to yours asking why I prefer "Pearson nails" to the other brands, I have to say in reply that I have been making boxes, crates and other packages in the apple packing houses at Watsonville, in the oranges and lemon business in southern and central California, and in the deciduous fruit business of central and northern California, and in Oregon for eight years.

I very much prefer the Pearson Cement Coated nails to any other in making fruit packages FOR the reason that the nails are more uniform than any other brand I have ever used. The Pearson nails are well pointed, and have a good head, and the kegs contain very few nails that have to be thrown out on account of imperfection. I find the wire stiffer consequently the nails drive better than any other make. This is particularly true in mashing nailing. When nailing by hand I use a stripper in both box making and lidding and find that the Pearson nail works more freely and easily in a stripper than any other make of nails that I have ever used, and I have used all kinds.

Hoping you will find this a complete answer to your inquiry, I am,

Yours very truly,

H C Poor

NOTE: Mr. H. C. Poor won the Box Making contest for the world's championship at Watsonville, Cal., on October 17, 1910, making 93 perfect standard apple boxes in one hour, thereby establishing the world's record and winning the championship. The above testimony should be convincing coming from an expert box maker.

J. C. PEARSON CO.

# Increase Your Profits!

By  
Using

## FANCY LABELS

on Your  
Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*

### Schmidt Lithograph Co.

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

twenty per cent on rows sprayed twice. These results also show that spraying reduces the per cent of the disease, and that two applications are more valuable than a single spraying.

In experiments in the Gish berry field, 1908, the Snyder blackberry plants which were sprayed during 1907 were given a single application of 4-4-50 bordeaux just before the fruit began to turn from red to black. The fruit was sorted on August 11, 14, 17, 20 and September 1. The per cent of diseased fruit on sprayed plants decreased from twenty-nine per cent to

twelve per cent, with an average of twenty per cent, while the fruit on plants that had not been sprayed gave an average of thirty-nine per cent diseased fruit, varying from twenty-nine per cent to forty-two per cent. In the inspection of diseased berries it was also noted that there were three times as many diseased drupels on fruit which had not been sprayed than the fruit which had been coated with bordeaux mixture. While late spraying reduces the disease such a practice cannot be recommended, as indicated by the above data.

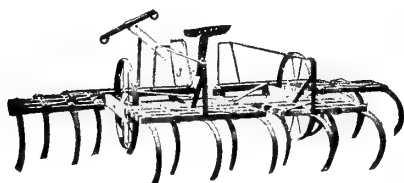
In experiments in the Paulhamus berry field, 1908, blackberries of the Snyder variety were sprayed twice with 4-4-50 bordeaux. The first application was made just before the flower buds opened and the second when the fruit was about the size of a field pea. Notes on the condition of the fruit were first taken during the fifth picking on August 15th. An average of twelve boxes of each of sprayed and unsprayed fruit was gathered on August 15, 16, 19, 21, 23 and September 2. After the first picking the per cent of blighted fruit gradually decreased from forty-two per cent to eleven per cent. The average of diseased fruit was twenty-three per cent. The diseased fruit on plants that had not been sprayed gave an average of forty-six per cent diseased fruit. In this fruit there was also a gradual decrease in per cent of diseased fruit from sixty-one per cent to twenty-seven per cent.

As indicated by the data, bordeaux is a valuable preventive against this disease.

Again, as has been pointed out above, there was a marked difference in the number of diseased drupels on sprayed and unsprayed fruit. There was a much larger per cent on the unsprayed fruit.

In experiments in the Friedley-Clark field, 1908, a few rows of the Lawton blackberry were sprayed with 4-4-50 bordeaux, when the fruit began to change from red to black. The berries were inspected on August 10, 14 and 22. The sprayed rows gave thirty-five per cent diseased fruit, while the unsprayed rows gave forty-nine per cent diseased fruit. There was an increase of ten per cent in the disease on unsprayed fruit during the twelve days.

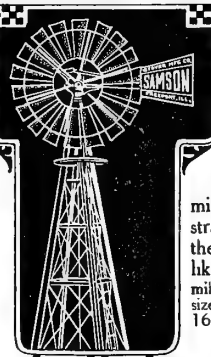
## ORCHARD CULTIVATOR



THE FORKNER LIGHT DRAFT HARROW is the only perfect light-running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. With this harrow one team can easily do the work of two teams with ordinary harrows. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3½ feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expense one-half, even if you have but five or ten acres of orchard. Write today for prices. LIGHT DRAFT HARROW COMPANY, Marshalltown, Iowa.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

### SAMSON WINDMILLS



The Wind Mill that is different from all other makes and better because it has double gear wheels and carries the load between these and in the center of the mill. There is no side strain, nor any noise on the up and down stroke like there is with other mills. Built in the following sizes: 4, 6, 8, 10, 12, 14, 16, 18 and 20-foot diameter.

Send for catalog.

STOVER MFG. CO., MFRS.  
ALSO FEED MILLS & GASOLINE ENGINES  
252 SAMSON AVE., FREEPORT, ILL.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Another field of Lawton berries was sprayed with 4-4-50 bordeaux. Two applications were made. The first was applied just before the blossoms began to open and the second just before the fruit began to ripen. The berries were thoroughly inspected on eight different days from August 3 to August 23, inclusive. There was an average of twenty-nine per cent diseased fruit on the sprayed rows and forty-one per cent diseased fruit on the checks.

A few hills of Kittatinny plants were sprayed twice, in the same manner as described for the Lawton. Three inspections were made (August 3, 10 and 13). The sprayed fruit gave thirty per cent diseased fruit, while the unsprayed gave forty per cent.

During all these inspections it was to be noted that the number of drupels on diseased fruit from sprayed plants were less numerous than those on diseased fruit from unsprayed plants.

Anthracoze is caused by a small form of fungus.

Distribution of the fungus is accomplished by the spores.

Anthracoze attacks the Snyder, Kittatinny and Himalaya Giant blackberries, the Lucretia dewberry, Loganberry, Antwerp and Cuthbert red raspberries and the Cumberland black raspberry.

The disease is very injurious to Snyder and Kittatinny blackberries, attacking the stems, leaves and fruit.

A microscopic study and inoculation experiments show that the same fungus

occurs in the spots on stems, leaves and fruit.

The fungus attacks the current year's growth of shoots when they are six inches to one foot in height, and later. Spots do not occur on the bases of these shoots.

The disease does not spread on the stems and its leaves after the branches form, since the canes and its leaves are infested, while the laterals and their leaves are usually free from the disease.

On the Snyder and Kittatinny blackberries the fungus spreads from the stems and leaves to the fruit as soon as the young fruit forms.

The disease continues to spread on the fruit during the entire season. The fruit is damaged more or less severely, depending on date of infection and the number of drupels on each berry that become diseased.

The fungus probably lives over winter in the berry field in the leaves on the ground and in the canes.

To check the ravages of the disease destroy the infested leaves and cut out badly diseased canes and shoots before the leaves fall off, and be sure to burn them. In order to kill the spores of the fungus on the canes spray with 4-4-50 bordeaux mixture before leaves appear. In order to protect the leaves and young canes the plants should receive a second application of bordeaux when the leaves are well out and by the time the young shoots are six inches in height. A third application should be made just before the blossoms appear.



**Read what Hood River says**

Hood River, Oregon, November 27, 1909.  
This is to certify that I have used Cooper's Tree Spray Fluids, V1, for killing San Jose scale and found it very effectual.  
G. R. Castner, County Fruit Inspector.

**APTERITE**

**THE SOIL FUMIGANT**

**DESTROYS INSECTS IN THE GROUND**

**REDUCES LOSSES SAVES PROFITS**

**IT WILL PAY YOU TO INVESTIGATE**

**Write for 1910 booklet (32 pages)**

**Testimony from fruit growers**

**everywhere**

**Agent:**

**C. G. ROBERTS**

**247 Ash Street Portland, Oregon**

**Sole Manufacturers:**

**William Cooper & Nephews**  
**CHICAGO, ILLINOIS**

## For Orchard Cultivation This Harrow Has Made Good

The "ACME" is the only implement you need to follow the plow in any kind of ground. It works either irrigated or dry farms. The sharp, sloping coulters on the "ACME" cut through the sod or stubble turned under by the plow, and do not drag it to the surface. The "ACME" is a perfect weed exterminator and mulcher, and will keep down weed growths in all orchards.

### ACME Pulverizing Harrow, Clod Crusher and Leveler

is also the best Harrow for general farming, and for fitting soil for grains, alfalfa, etc., because the coulters work every inch of the soil, cutting through to the under soil, which other harrows leave lumpy and full of air spaces, pulverizes and then compacts this under soil and leaves the top soil loose. Soil harrowed with an "ACME" will attract and conserve all the moisture for the benefit of the growing crops. Made entirely of steel and iron. In sizes to suit every one—3 to 17½ feet wide. Each and every part guaranteed.

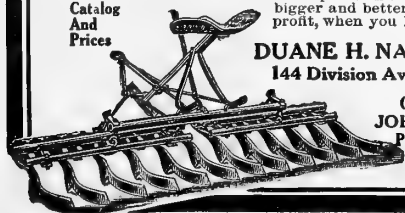
**Keeps Down Weed Growth—Produces Ideal Surface Mulch—No Tree Roots Injured by The Coulters—Branches Not Disturbed by Horses.**

Write for  
Catalog  
And  
Prices

Send for our combined catalog and booklet — "Preparation of The Soil," which will mean bigger and better growth for you and more profit, when you have read it.

**DUANE H. NASH, Incorporated**  
**144 Division Ave., Millington, N. J.**

**GENERAL AGENTS:**  
**JOHN DEERE PLOW CO.**  
**Portland, Ore., Spokane, Wash.**



## DO NOT ARRANGE FOR THE MARKETING OF YOUR NEXT SEASON'S CROP, UNTIL YOU LEARN ALL ABOUT THE Produce Reporter Company AND ITS SYSTEM

It is not a selling agency, but it equips you to do your own business at the minimum expense and with the maximum safety.

No matter even if you should place your crop through some marketing agency, you ought to keep posted on that agency or that "distributor," and you should know to whom your goods go, and insist upon their being placed with or sold to reliable traders. That is a duty that you owe yourself.

It is impossible in the limited space of this advertisement to go into your great problem of successful marketing, but your investigation of this subject will not be complete unless you get the printed matter of this organization. It will cost you but a moment of your time and two cents postage to ask for it, and it may make or save you several hundred dollars next season.

### Produce Reporter Company

**34 South Clark Street**

**Chicago, Illinois**





# 20th Century Grader

**Saves Time, Horses, Labor, Money—Gets the Water on Your Land**

The 20th Century Grader enables you to get the wealth from your land with the least labor and expense. This wonderful machine—weight only 600 pounds—with **one man and two or four horses**, does the same work in **half the time** consumed by big, heavy graders, with two men and four or six horses.

The 20th Century makes irrigation farming surprisingly **easy**. You can put it to a score of uses, saving labor, time and money. It is the most serviceable, handy and practical machine you can have on your place—saves you the cost of several expensive machines that you need, although you use them only once a year. This grader gets the water on your land **without fail**. Farmers have **proved** it.

The 20th Century is built of steel, and built right—light draft; **every ounce of power goes against the dirt**.

And it **works right**, too. One man handles it easily. It turns in a ten-foot circle. Blade can be set any angle and easily **reversed**. The 20th Century Grader cuts laterals, shallow drainage ditches and side ditches, levels fields, throws up dykes, slashes off sage brush, cleans laterals and throws borders, grades and crowns roads, moves dirt anywhere and drops it where you want it.

It will solve your irrigation problems, cut your work in half, make bigger profits. With this remarkable money-maker your year's work will bring you a bigger return with less effort and less expenditure for machinery and horses.

THE BAKER MANUFACTURING CO.  
542 Hunter Building, Chicago

Please send me catalogue on 20th Century Grader.

Name .....

Town .....

State .....

Here is an opportunity to learn about the farmer's most useful and modern machine. You ought to know **all** about it. Send today for our free catalogue, containing complete descriptions and fine illustrations from actual photographs of these wonderful little steel graders at work. Read what farmers who use them have to say.

**Mail a postcard or coupon now.** Information which will help you to make your land pay better will be sent you by return mail.

**The Baker Manufacturing Co.**

HUNTER BUILDING

CHICAGO, ILLINOIS



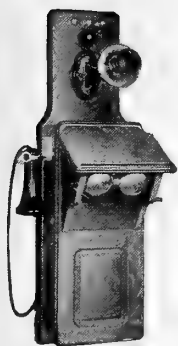
## VALUE OF ORCHARD HEATING

By J. L. Hamilton, at State Horticultural Meeting, Rifle, Colorado, December 12, 1910

THIS is now the third year that I have been asked to appear on your official program and say something on the subject of "Orchard Heating," and I assure you that it is with a keen sense of pleasure that I review the progress made in this very interesting work during the past three years. I say keen pleasure because the practical application of orchard heating on commercial lines on an extensive acreage was first made by the writer against the rigorous conditions of our climate. Since a fine crop of fruit was snatched bodily from the frost by the writer, and the fact established that it was a practical operation, the proposition has grown like the proverbial "rolling snow ball," until today orchard heating has become a household word in the homes of every fruit grower in every fruit growing section of America as well as in foreign countries.

The marvel is that any proposition should spread like wild fire and reach every nook and corner of the world in so short a period of time, and its many advantages become so readily understood and appreciated. It is, therefore, a great pleasure to the writer to feel that he was the first to "touch the button" that set in motion so ponderous a machine, one that means so much to the fruit and vegetable growers of the world. To appreciate what it means to the growers we have but to refer to our files, so well filled with letters written in many foreign lands as well as letters by the thousands from every fruit bearing state of the Union, from growers that have heard the good news of crop insurance and are anxiously waiting for the latest news from the front ranks. Added to these are hundreds of letters from growers who have actually met the enemy in their orchards and groves, and in writing express to me

## The Ring of Your Telephone



Today is a part of your life. You answer as you do the knock on your door.

It lifts the latchkey of your neighbor, though he be miles away by the highway.

It aids you in fire and accident—saves time and money.

But it must be a reliable, efficient telephone.

Get the best telephone made—it's good economy—experience proves it.

Kellogg telephones and systems are known as standard apparatus everywhere.

Our representative, Mr. Morseman's address is in care Moxum Hotel, Salt Lake City, Utah.

Write to him for information and prices. Farm telephone bulletins mailed on request.

**KELLOGG SWITCHBOARD AND SUPPLY CO.**  
Chicago

Manufacturers of Standard Telephone Equipment

Inventor of Nesbar Nozzles constructed first fruit sprayer for most prominent agricultural experiment station in United States; 28 years' practical experience advances Nesbars as leaders; spraying more trees and vines because you keep on spraying, not cleaning; envelops verdure complete with mist cloud of unequalled density; superior to flat or circle of coarse spray, which splash and drip. Nesbars throw finer, wider, larger; instantly cleaned; all metal; straight or angle, 75c. Largest exclusive nozzle manufacturers in world. Circular? NESBAR NOZZLE CO., Dept. O, Elmira, New York.

## Make Your Water-Power Work for You

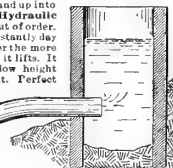
It is a simple and easy matter to utilize the water-power that is going to waste in the flowing streams of water and springs. A two-foot fall is all that is necessary. You can make the falling water supply enough power to raise itself to a level where it will be useful to you. You can irrigate your land—you can supply water to your house and other buildings—you can store water for use when the stream or spring is low. No engine of any kind required. The power of the falling water does all the work with the aid of a

## Phillips Hydraulic Ram

**HOW IT WORKS**—To the right is illustrated a spring of water; on the lower left hand corner is pictured a cross section view of a PHILLIPS HYDRAULIC RAM. The little arrows in the spring indicate that the water is running into a pipe that is connected to the Ram. The water flows through the pipe downward to the entrance of the ram. Notice the numbers on the illustration and follow this description carefully. 4 is a ball that stops the water from going through until sufficient power is exerted. 2 is a sort of a valve that raises as the water gains in momentum. The water enters the ram and as it cannot go past 4 it gushes through valve 2. The little arrows illustrate the water gushing out. It comes faster and faster. When it reaches its top speed it carries the valve 2 up against a solid piece of metal 8. This shuts the water off at 2. The water having reached its maximum of speed and being suddenly shut off by valve 2, naturally tries to get out some other place, so it rushes up to ball 4 and pushes it out of its socket and flows past to 5. The instant the water enters chamber 5 valve 2 falls down again because the pressure is released. The instant valve 2 falls the water goes through passage 2 and ball 4 falls back into place. The water that went through has been captured and it can't get back. It has taken some little time for you to read this description of the operation. It takes but a very short time for it to happen. It happens some times 70

times in a minute. Now let us go a little farther. Every time valve 2 falls and lets the water through; the water falls down from ball 4. As it falls it causes some air to be sucked in from air faucet 3. Air can pass but one way through this faucet—that is in. When the water enters chamber 5, it carries the air with it. The air immediately goes up into chamber 6. Some air goes in with every action of the Ram. It compresses in chamber 6. When ball 4 falls into place, the compressed air forces the water from 5 out through 1 and up into the pipe at the left. The Phillips Hydraulic Ram has no springs—nothing to get out of order. It never has to be oiled. It works constantly day and night. The greater the fall of water the more power the Ram exerts—the more water it lifts. It pumps a large amount of water to a low height or a small amount to a greater height. Perfect in action, simple in construction, economical and efficient.

Air Suction



For information as to size of Ram you require, and price, write a letter explaining how much water fall you have, and other information, to

**Phillips Hydraulic Ram Co.**  
432 LUMBER EXCHANGE BLDG., PORTLAND, OREGON

# Malthoid Roofing

The dependability of Malthoid Roofing has been proven by special tests covering a period of many years.

Malthoid will last as long as the building it covers. It is inexpensive, easy to lay, and your roof troubles are over when Malthoid is laid.

Made by **THE PARAFFINE PAINT COMPANY**

San Francisco and Everywhere

Stewart Hardware & Furniture Co., Agents, Hood River, Oregon

**IT'S FREE**

Send for it. A new and valuable book on

**Cheerful Homes**  
This booklet is illustrated with pictures of the most beautiful bungalows of Southern California

## THE BEST EVER—AND ONLY \$1.00 A YEAR

If you are interested in Irrigation, Drainage, Conservation, Farm and Land Development, or Orchard Culture, you can't afford to be without the

# National Land and Irrigation Journal

The leading magazine of its kind in the world. Handsome four-colored fruit or land picture (just the thing to frame) on the front cover every month. It is also a *Bonanza For Advertisers* because it goes to every state in the Union and into nine foreign countries. Send \$1.00 today to the NATIONAL LAND AND IRRIGATION JOURNAL, 126 Market Street, CHICAGO, ILLINOIS

their genuine delight because of the successes they have met, all knowing that at last they have broken the shackles that have bound them for years, and from the sad experiences of losses of their year's expectancy by the frost. From my experiences of three years ago to the present time orchard heating has grown to the proportions of national and international interest, and the business of supplying the necessary equipments for this work has assumed amazing proportions, and by next spring there will be installed in the orchards and vegetable tracts of America alone several million heaters. In the orange groves, the pineapple tracts and the vegetable gardens of Florida are now close to a half million little stoves, ready to belch forth their tiny fires in defense of the crop at the call of the grower. In every state, extending from Florida northward to Maine, the growers are bestirring themselves and preparing to equip their orchards with heaters.

Likewise the Central and Western states that suffered so severely from the frosts last spring are now teeming with interest, and scores of carloads of orchard heaters are even now being bought, while westward as far as the Sunset State and northward to Washington orchard heaters is the topic of conversation, and hundreds of thousands are being purchased by the growers. Even in sections of the country that have always been considered practically free from frost because of favorable topographical conditions the heater is winning its way, as there is no section, upon critical examination, but that has lost more or less fruit by the ravages of the frost, and the anxious fear of the decline in the prices of realty that would occur if the fact became known to the world that they used orchard heaters has assumed a new phase. The purchasers of fruit tracts are now looking for the sections of the country where all orchard operations have been reduced to the

best science, and orchard heating is now the most important item in orchard work. The most famous fruit valleys of the country, including the Grand Valley of Colorado and the valleys of the Northwest, are the sections farthest advanced in the science of orchard heating, and it is a question of but a very short time when every section that strives to keep up with the rapid march of progress will necessarily have to adopt orchard heaters. It is silly to deny that insurance of any description is a good thing, and certainly any grower who has felt the keen loss of his valuable crop of fruit cannot but recognize in the orchard heater a friend that has come to him in the time of need, and I venture the assertion that after a grower has lost his crop two or three years in succession his one hope is for a crop of fruit, and his concern is but little about the value of his land. As with all new enterprises, there is a crop of skeptics who say there is nothing in this operation, and

Book  
46-B

## Improved Machinery and Methods Increase Profits

Any or all of these booklets sent FREE  
Please ask for the books by number

### ALFALFA

Its Seeding, Culture and Curing, by one of the highest authorities in Kansas, the greatest Alfalfa State, is full of practical information about this new and important crop.

Get posted on this interesting subject.

### A BRAND NEW ORCHARD HARROW

The DEERE MODEL R. Orchard Harrow is making a hit with Orchardists everywhere.

Made in 4, 5 and 6-foot sizes, with or without extension frame; extreme width extended 12 feet. Shields for protecting low growing branches; double angling levers give instant control of disc gangs.

Very readily adjustable from in-throw to out-throw or visa versa. This harrow is built especially to meet the conditions in the Northwest.

You'll like the work of this harrow.

### DISC HARROWS

The Disc Harrow is the most necessary tool on the farm today. The advantages of thorough discing are just beginning to be understood.

The DEERE MODEL B. Disc Harrows control the gangs and force them into the ground by a spring pressure, thereby securing the most even and thorough penetration and cultivation.

Whether you buy a disc harrow or not this year, it will pay you to read up all the new features of the DEERE line of harrows and the MODEL B. in particular.

REMEMBER, it is the only spring-pressure harrow made and spring-pressure control insures more perfect work.

### BETTER HAY

If you have ten or more acres of hay you will be interested in the New Deere Hay Loader.

The Loader that lasts a lifetime; that has absolutely the lightest draft of its width; delivers the hay at the highest point; rakes absolutely clean without gathering trash; will handle the hay in swaths, windrows of any size, or bunches.

The New Deere couples automatically and unhitches from the load and has many other exclusive and valuable features. **ALL IN THE BOOK.**

### FARMERS' POCKET LEDGER

The Farmers' Pocket Ledger is a new, durable and handsome memorandum book which contains lots of practical information and has plenty of room for recording important transactions. The most popular little book of its kind.

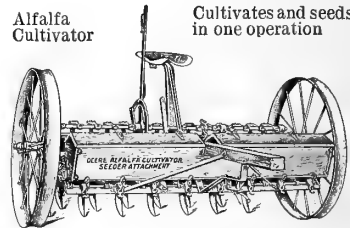
Please ask for books by number

Address

DEERE & MANSUR CO.  
Moline, Illinois

Alfalfa  
Cultivator

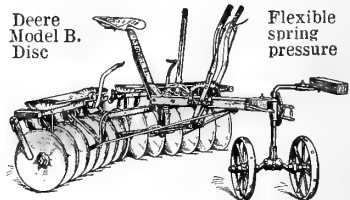
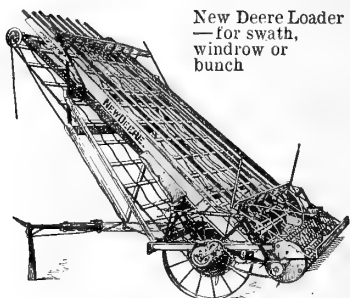
Cultivates and seeds  
in one operation

Model R. Orchard. Wide adjustment  
with branch and leaf guardsModel R., rear  
view, regular  
frame, reversible,  
adjustable

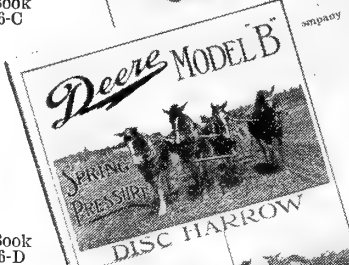
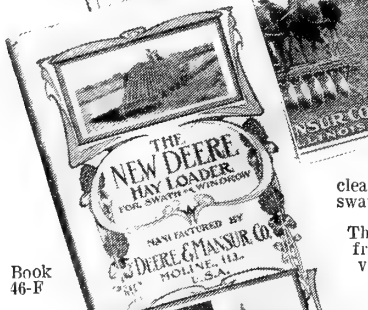
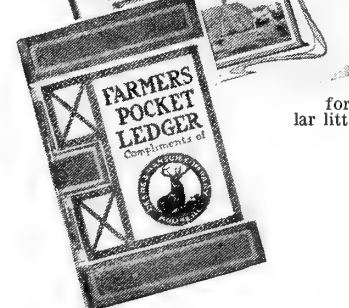
Can be tipped  
up or down  
for ledging

Deere  
Model B.  
Disc

Flexible  
spring  
pressure

New Deere Loader  
— for swath,  
windrow or  
bunch

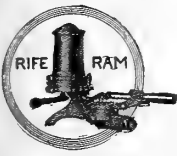
Handles grain without threshing. The only  
loader with automatic hitch and unhitch

Book  
46-RBook  
46-CBook  
46-DBook  
46-F

**BETTER FRUIT  
GROWS ON IRRIGATED LAND  
INSTALL A 1068**

**RIFE RAM**

**PUMPS WATER AUTOMATICALLY DAY OR NIGHT**



The first cost is low, there's no operating expense. Raise water 30 feet for every foot of fall. Fully Guaranteed.

If there is a stream, spring or pond within a mile, write for Free Plans, Free Book and Free Trial Offer.

**RIFE ENGINE CO.**  
2525 TRINITY BUILDING, NEW YORK

this extends even into the departments of our official government at times. So far as orchard heating is concerned there is no man who has ever investigated the subject with the honest purpose of learning the facts in the case but who becomes an enthusiast on the subject. During the spring of 1910 there were approximately one million heaters in the hands of the growers in many sections of the country, and the testimony of thousands of growers who used the heaters with satisfaction cannot well be disputed by any individual. We know of scores of crops that were saved from ruinous frosts or freezes that have netted the growers all the way from six dollars to twelve dollars per heater that cost from twenty-five to thirty cents per heater for fuel and labor for the season's operations. I say that, with testimonials and affidavits from a multitude of growers confirming these figures, that no person with reasonably good sense can say there is nothing in it. It is a subject that should be investigated thoroughly by our government officials at Washington and a vast amount of publicity given all the facts, so that every grower may, as quickly as possible, become acquainted with this very simple operation. As fruit growers and users of orchard heaters we are learning new things about this work every year, and this applies to a better knowledge of temperature conditions as well as equipment. Like all new things, we have to acquire our knowledge largely by experience, by observing very closely every item that enters into and affects the successful manipulation of the equipment and its adaptability to the work intended. We are learn-

ing much about the natural climatic conditions that may be expected to follow a certain condition that actually exists, also what may be expected of the dreaded condition when it arrives. We are learning how best to meet this condition by the bettering of the equipment and the elimination, so far as possible, of extremely crude features that call for laborious work, all of which make for better protection because of better preparation and the consequent reduction of cost of operation. All are agreed that a sufficient amount of fuel must be consumed to generate a sufficient amount of heat energy to secure the desired results, and this, of course, is true of any system employed. If the temperature shows 10 degrees of frost it is a fact that 10 degrees of frost must be overcome, and also a fact that a sufficient amount of fuel must be consumed to produce sufficient heat energy, which, combined with other natural conditions, will overcome 10 degrees of frost. We also know that when the thermometer shows 10 degrees of frost in the air that this is the moment that the fires must give sufficient heat energy to overcome the 10 degrees of frost, not two or three hours prior to this critical period, nor two or three hours after the critical period has passed, nor for two or three hours only should this critical period last for four or five hours, but the temperature condition must be faithfully met at the exact time and the artificial temperature maintained constant so long as the frost condition is in evidence, graduating the fire energy with the increasing or declining of the frost intensity. A large number of different devices and systems have been tried out thoroughly in this valley, all of which have served the purpose of giving us the knowledge of what the conditions are that we have to meet and a better idea of what methods and equipments are best adapted to the work. The process of elimination has relegated a large percentage of this equipment, and better devices and equipments are being employed. The greatest thought and concern is for the equipment, regardless of cost, that affords the best protection to the crop, and, secondly, the elimination of as much of the back-breaking and laborious work during the night hours, and, third, the reduction of the cost to as low a figure as possible, so long as it does not in any manner affect the ultimate result desired—the absolute protection of the crop. There are some individuals who feel they must exert some effort toward saving their crops, but in a half-hearted manner figure what is the cheapest possible system they can secure, acting on the proposition that if they must smudge they will do it just as cheap as they can and trust to luck for results. Altogether too much of this

**THINGS WE ARE  
AGENTS FOR**

**KNOX HATS**

**ALFRED BENJAMIN & CO.'S  
CLOTHING**

**DR. JAEGER UNDERWEAR**

**DR. DEIMEL LINEN MESH  
UNDERWEAR**

**DENT'S and FOWNES' GLOVES**

**Buffum & Pendleton**

**311 Morrison St., Portland, Oregon**

kind of smudging has been done in the valley and elsewhere, with the result that when the extreme weather condition arose they lost their crop, either partially or wholly, and some say they now understand where they made their mistake, and are either buying better equipment—the best their money can buy—or are opposed to orchard heating in general because they tried it and failed. I would much rather double my equipment, regardless of cost, and save a full crop than to skimp the equipment and lose half the crop, or, possibly, all of it. The best signs of the times is the fact that a large number of the best growers in this valley, those that use their brains, are taking just this view of the subject, and are adding extra equipment and using extra precaution in preparation. This is wise, as in the event no fire is used the expense will be slight and in the event an emergency arises they are better prepared to meet it, and the grower will thank himself for his forethought. When he walks into his orchard in the summer months and looks at the well filled trees he will forget all about the little extra expense he put on his equipment.

I appreciate the difficulties the growers are laboring under in selecting an equipment. The market is today flooded with orchard heating devices, and all kinds of claims are advanced by each maker,

**ACID BLAST  
ETCHED PLATES**  
*We have installed  
the only etching  
machines in the  
State of Oregon*  
*Blast etched cuts  
have a printing  
quality which has  
never before been  
obtainable with  
process engraved  
plates . . . . .*  
**THEY COST THE SAME  
AS THE OTHER KIND**

**WE MAKE  
CUTS  
THAT PRINT**

**HICKS - CHATTEN  
ENGRAVING CO.**  
607 BLAKE-McFALL BLDG., PORTLAND, OREGON

**J. W. Baltes  
& Company  
invite your  
inquiries for  
Printing**

**SPECIALISTS IN THE ARRANGING  
AND EXPEDITING OF FINE WORK**

**Corner of First and Oak Streets Portland, Oregon**

# VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.  
HOOD RIVER, OREGON



## Rapid Lighter

Price \$4.00

For use in lighting smudge pots in orchard heating. Almost indispensable when fuel oil is used. It is a tremendous saving of time when time is valuable; also of material. For description, address JOHN STEEL, Ramage Building, Omaha, Nebraska.

## Johnson's Share Only 7%

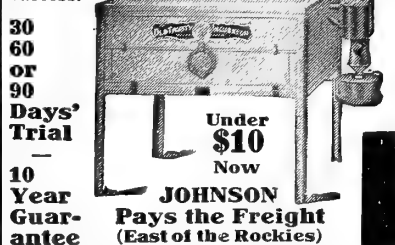


M. M. Johnson

I've got a most profitable chicken raising message for 1911 to send you—and my book, Johnson's own writings again. Hundreds of photographs—every page a poultry sermon on how simple and sure many thousands of satisfied customers of mine have proved Old Trusty. I'll write my price to you personally—less than \$10—freight prepaid (E. of Rockies) and show you how I'll make less than 7%—less than 70¢ on every Old Trusty on over 100,000 output this year.

## Old Trusty 1911 BOOK FREE —Send Name

I used to have to make as high as 16% when I sold one-half as many. But I'd rather put down the price and sell more than twice as many on 7% making profit. And Old Trustys are better than ever this year—over 80% hatches guaranteed and my guarantee to last you ten years. Handsome metal encased over asbestos covering. Beginners find them simple, easy to run and sure. Expert poultry raisers praise Old Trustys for highest standard success.



30  
60  
or  
90  
Days'  
Trial  
—  
10  
Year  
Guar-  
antee

Under  
\$10  
Now  
JOHNSON  
Pays the Freight  
(East of the Rockies)

Whatever else you do—don't miss this offer. Don't miss my 1911 Old Trusty Book with hundreds of photographs. Be sure to write me a postal before you buy anybody's machine this time. Address

M. M. JOHNSON  
Clay Center Nebraska

some of which are too ridiculous to notice. I will suggest to the grower that the one thing to keep in mind is the fact that the whole operation is for the purpose of temperature raising, and this means that at times you will have but two or three degrees of frost to overcome, or any intermediate degree up to possibly fifteen degrees, and what you must have, and what will prove the best protection, will be a system that meets all the varying conditions that you will experience. A crop of fruit is what you want, and the device that will best guarantee this crop against every possible weather condition will prove the cheapest. All things are dear or cheap by comparison, and the device that you know, from the experiences of other growers, has proven the best protection and that saved the largest percentage of crops, is by far the cheapest. The question of liberating the proper amount of heat is a serious one. It costs money to supply the fuel, therefore it should not be wasted any more than can be avoided. A device that first of all gives absolute protection to the crop should be selected, and the next thought the device best adapted to generate the fire necessary to meet the varying weather conditions. Fuel is only part of the expense. Labor costs money, and it is also possible that with any system that requires a large amount of labor to handle that the necessary number of men may not be secured when needed, and the grower would be as bad off as though he had no heaters. To reduce the labor cost to the lowest possible figure a device must be selected that eliminates as far as possible all night work and one that is easily re-charged the next day after using. This means large fuel capacity as well as simplicity of construction.

Of great importance to the growers also is the materials used in the device. A grower does not expect to have to replace his equipment of heaters every two or three years. If so, it will prove to be an expensive proposition for him. Select a device that represents the best possible mechanical construction as well as of heavy materials. This means the elimination of any features that will cause the device to quickly deteriorate or give out on account of any weak point. It should be made of iron or steel of sufficient weight or thickness that it will not so easily rust or become affected by the intense heat of the oil fire. Every one of these items is of importance, and if carefully considered by the grower will help him out of some troubles, and will result in his securing the best possible device for his use. It is also important that the equipment should be well cared for at all times, for if abused its life will be shortened. The heaters should be well housed in the summer after the oil has been emptied, and they should be put away well saturated, then no rust or deterioration of any kind will result.

I will further suggest that any grower might well follow closely the work of those who have been actively engaged in this work and have been successful in heating orchards, as it will be of great assistance to him, and, remember, that orchard heating is made up largely of important details, any one of which, if overlooked, would result in loss, and no one feature controls it. As an example, you might work on the theory that all that is required is the liberating of a vast amount of heat. At first thought this is correct, but of just as great importance is the control of this heat, so that you can secure the greatest amount

## THE EASIEST WAY TO INSURE THE EFFICIENCY OF YOUR IRRIGATION SYSTEM ■ ■ THE efficiency of your irrigation

system depends on the efficiency of the engine that operates it. You may not need to use it for months, but when you do need it, your need is urgent. It means actual financial loss then if it doesn't work. Bear this in mind when you select your engine. Pick out one that is a known quantity—not an experiment.

I H C Gasoline Engines are always a safe selection. Their efficiency has been proved. They have years of success behind them. There are thousands in use.

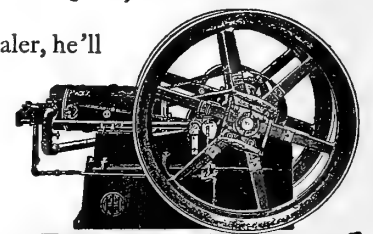
## I H C Gasoline Engines

are made in all styles and sizes—1 to 45-H. P.—vertical or horizontal—stationary, portable, or traction. This makes it easy for you to get just the right type and size for your individual use.

Besides supplying power for your irrigating system, an I H C engine can be used for operating the feed grinder, fanning mill, thresher, separator, churn, washing machine, cider press, alfalfa cutter, etc.

If you will call on the I H C local dealer, he'll be glad to show you points of I H C superiority you ought to know about. Ask him for the I H C Gasoline Engine catalogue, or, write the nearest branch house.

Western Branch Houses: Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.



### I H C Service Bureau

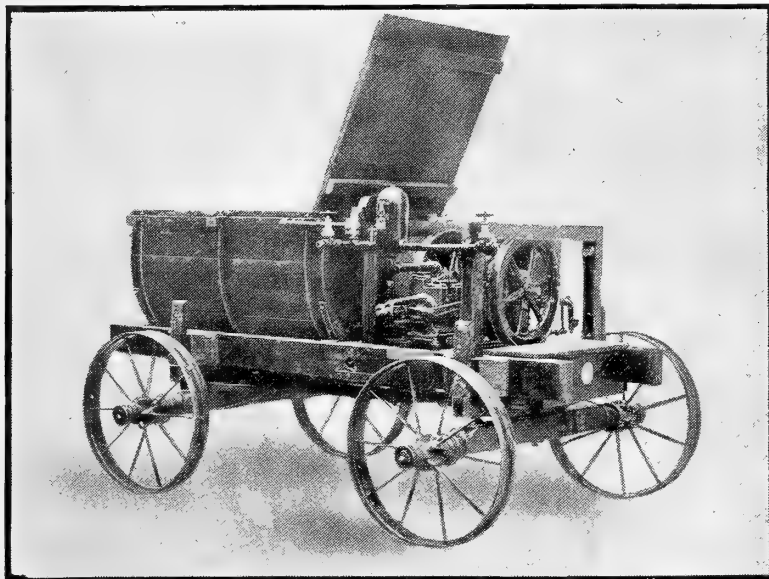
What is it? A clearing house of agricultural data. What does it do? Helps farmers to help themselves. How can it be used? By sending your farm problems and puzzling questions to the Bureau. We are co-operating with the highest agricultural authorities, and every source of information will be made available to solve your difficulties. We shall be pleased to have an opportunity to assist you. Write the I H C Service Bureau.

INTERNATIONAL HARVESTER COMPANY OF AMERICA  
Chicago (Incorporated) U S A



# NEW POWER SPRAYER

ESPECIALLY CONSTRUCTED TO MEET THE REQUIREMENTS OF THE FRUIT GROWERS OF THE NORTHWEST



After talking with a number of the fruit growers, we have embodied in this Spray Outfit the suggestions which they gave.

The first machines on the market were too heavy (weighing not less than 2,000 pounds). This machine weighs only 1,300 pounds, which is a feature to be considered on hillsides and soft ground.

The machine is built low enough to clear the branches of the trees, being 4 feet 3 inches from the ground. The tank and cover for the engine are so constructed as to serve as a platform for the operator to stand on while spraying down into the calyx. Again it differs from the first machines in that it is very short, being but 4 feet 8 inches wheel base, making it possible to turn short.

This Spray Outfit, with the Fairbanks-Morse one-horsepower engine, direct connected to a special pump designed to give 200 pounds pressure continuously through two hose connections and nozzles from a tank of 150 gallons capacity, appeals to the fruit growers because it embodies every feature they regard as important.

We invite you to investigate this entirely new Spray Outfit. Write for catalog.

## FAIRBANKS, MORSE & COMPANY

PORTLAND, OREGON

SEATTLE, WASHINGTON

SPOKANE, WASHINGTON

of this heat when it is needed greatest. It might result, by following out the theory you would work on, that you would liberate the largest amount of heat at an early period of the frost, when you needed the very smallest amount of heat, and when the time came that you needed the largest amount, and the very best heat, you would be reduced to the smallest amount, and as a result lose your crop, because, while you burned enough oil during the period to save your crop you did not burn it at the right time in its greatest quantity, and, therefore, might just as well not have burned any. It would be like having a fire in your furnace so great that the temperature in your house would be 100 early in the evening, when but a small amount of fire was required, and later in the night, when it is zero, you find the furnace has burned out all its fuel and nothing but a small fire can be secured, and as a result your water pipes freeze. Such an arrangement would not be tolerated for a minute.

The furnace gave out enough heat during the entire burning period to have comfortably heated your home, but you did not control this heat, and right here lies the keynote of successful orchard heating. The controlled heat is the all important feature. First, plenty of heat, and, secondly, the control of this heat; and soon no equipment will be tolerated in the orchard that does not scientifically meet the requirements. I trust my words will not be misunderstood, as I have endeavored to bring out the practical points in this important work, and I believe that any grower who has actually heated an orchard against frost conditions will agree with me on every point.

The operations throughout the country are going to be on a very liberal basis this spring, and the results of the work will be watched with great interest. It is not to be presumed that every user will be successful at first, as so many will not take the pains to thoroughly understand what will be required of them, and others will enter into

the work half-heartedly and overlook important details, and the results will be far from satisfactory. Others will enter into the work with a determination to win and with an anxious desire to save the crop, and will do the right thing at the right time. These are the men who will write us letters next spring telling us of the great success they had in operating our heaters, and their names will appear in our book of testimonials.

WHY PAY FREIGHT ON WATER?

BUY

## Vreeland's Electro Arsenate of Lead IN POWDERED FORM

The most effective and economical insecticide for all leaf-eating insects. Electro is the only successful powdered Arsenate of Lead because it is the only one that mixes instantly with water in such a finely divided state that every drop of spray contains the right amount of arsenic. It cannot be washed off by rain, and will not injure the newest, tenderest foliage.

We guarantee it to contain 30 per cent arsenic oxide—50 per cent more than other brands—as proved by Connecticut and New Jersey Agricultural Experiment Station tests. Write us for them. Save the freight on water—there is 40 to 60 per cent in all pastes. Put in the water at home.

We also have the best paste on the market, and will prove it if you prefer Arsenate of Lead in this form.

Write us if your dealer cannot supply you with Electro brands. Do not accept substitutes.

CHAS. H. LILLY & CO., General Distributors, Seattle and Portland  
(Agents in all principal districts)

Manufactured by VREELAND CHEMICAL CO., 50 A Church Street, New York City

## LILLY'S BEST SPRAY BOOK

This is the book every fruit grower and farmer needs. It is complete in every detail including an absolutely scientific Spray Calendar with diseases and insects illustrated and described.

**HAND AND POWER  
Spray Machinery**



Tested sprays and insecticides are all included together with prices, illustrations and full descriptions. Lilly's Spray Book is a practical guide. Send for it—free to those asking. Chas. H. Lilly Co., Seattle.



High Pressure **"BARUCO"** Spray Hose

This wonderful high grade *Spray Hose* is in no respect similar to other brands, except that it looks like

## Good Hose

Especially compounded to withstand *Distillate Solutions, Bordeaux Mixture* (Blue Stone) and other sprays usually so destructive to the ordinary hose. A special *heavy duck fabric* employed, each ply of which has ten times the strength of ordinary sheeting so generally used by other manufacturers.

2 ply guaranteed 400 pounds pressure . . . 20c foot

3 ply guaranteed 500 pounds pressure . . . 25c foot

From your dealer or direct from factory. Write us for samples; we will also send you *valuable information* which will prevent the unscrupulous concern from imposing upon you.

## PENNSYLVANIA RUBBER COMPANY

FACTORIES: JEANNETTE, PENNSYLVANIA

Branches: 512-514 Mission Street, San Francisco, California, and 930 South Main Street, Los Angeles, California

## "From Office to Orchard"

ADDRESS



A. D. CHARLTON  
ASSISTANT GENERAL  
PASSENGER AGENT  
Portland, Oregon

or

A. M. CLELAND  
GENERAL  
PASSENGER AGENT  
St. Paul, Minnesota

THIS is the title of a unique booklet, in the shape of an apple, containing the true story of a man of family who "broke loose" from the city and "made good" in a Northwestern orchard. It is profusely illustrated and will strike a responsive chord in the breast of every man who has his eye on the future of his loved ones and himself. A request on a postal card will bring the booklet unattended by any obligation, except that of thinking it over.

**WASTE IN FARMING METHODS.**—Although China is probably the richest agricultural region on the globe, and is capable of producing millions of dollars' worth of crops in excess of its needs, it is a sad fact that, through wasteful methods and lack of improved implements, the yield of crops is totally inadequate to supply the demand, and the majority of Chinamen living in the heart of the finest farming region on earth are forced to subsist almost entirely on a diet of rice.

## Better Farming

### A John Deere Book



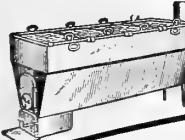
—Just Out  
A Farmer Can  
Get It Free

THIS valuable book has eighteen articles on live farm topics, written by the highest authorities. Get the book and a full description of John Deere Plows and Cultivators. They are the implements of quality, made for farmers who want the best. We will send the book and catalogue of John Deere goods if you write for

Package No. 46

Mention the package number sure, then you will get exactly the right stuff.

DEERE & COMPANY, MOLINE, ILL.



Let Me Help You  
Make More Money  
Out of Your Fruits  
and Vegetables

Don't let your surplus fruits, etc., go to waste. Can them, the same as a large canning factory. Small investment, big profits. Easy to build up a profitable business of your own, on the farm.

**A Stahl Canner Will Do It**

Made in all sizes. Prices \$4.20 up. Fully guaranteed. Over 100,000 in use. I furnish everything needed to make a complete canning factory on the farm. My great Canners Book describes Cannerys, and tells how to market canned goods. It's free for the asking. Write to-day—NOW.

F. S. STAHL, Box 304-M Quincy, Ill.

The same lack of progress is also to be found in many other countries with splendid natural advantages for agriculture. For instance, in many parts of Spain and Portugal, as well as in fertile India, the farmers still adhere to the most primitive implements, and may be seen working in the fields with a crooked stick for a plough.

While America produces crops far in excess of any other country in the world, this prosperity is not due so much to natural advantages as to progressive methods and the adoption of improved time and labor-saving implements. In fact many of the most fertile and productive portions of our farm land were wrested from the barren desert by means of irrigation.

This principle, which is true as to nations, is equally true with the individual, and the farmer who adopts modern time and labor-saving implements in his field and garden will save money and produce larger and better crops.

No tools have done more to enrich the farmer and increase his crops than the well-known Planet Jr. farm and garden tools. Their excellence is recognized by farmers everywhere.

These tools were invented by Samuel L. Allen, a practical farmer, whose original ideas led him to construct improved implements for use on his own farm. The ingenuity of these inventions, and their practical efficiency, were too good to

remain long unknown, and he was soon constructing similar implements for his neighbors. From this beginning has grown the large and complete plant of S. L. Allen & Company in Philadelphia, from which enormous quantities of farm implements are now shipped to all parts of the world.

Samuel L. Allen did not stop with the perfection of a few implements, but has extended his abilities to every branch of farming and gardening. Planet Jr. tools include seed drills and wheel hoes for garden, one and two-horse cultivators, potato diggers and orchard and beet tools that are adapted for all farming and gardening purposes.

Any farmer who is interested in getting the best results will find a copy of the Planet Jr. catalogue filled with valuable suggestions and helpful information. It can be had upon request.—Contributed.

Editor Better Fruit:

I enclose \$1 for one year's subscription to "Better Fruit." I do not want to miss an issue. I believe that "Better Fruit" is of so much benefit and value to every fruit grower that none should be without it. Yours very truly, M. J. Mohitz, Sebastopol, California.

## Planet Jr.

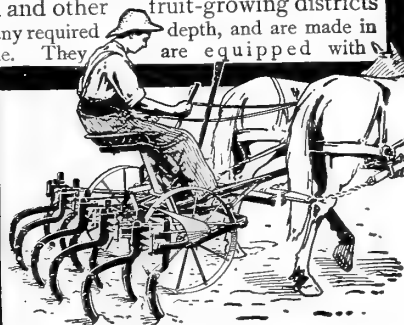
### No 41 Orchard and Universal Cultivator

Adapted especially for the work of orchardists and vineyardists. Does quicker and more thorough work than any other implement made for fruit-growers' use. Planet Jrs were invented by a practical farmer who felt the need of just such implements. They are backed by over 35 years' manufacturing experience, and are used by thousands of orchardists throughout California and other fruit-growing districts.

They furrow, hoe, and cultivate to any required depth, and are made in sizes which work up to 7 ft. 9 in. wide. They are equipped with side-hitch and fruit and tree shield. Can be changed to a disc-cultivator. High-carbon steel frame, steel tongue, low wheels enclosed by the frame. Strong, substantial, easily handled.

We carry stock in San Francisco. Agencies in all principal Pacific Coast cities. Write for name of nearest agent, also illustrated 56-page catalogue of all 1911 Planet Jr implements. Free and postpaid.

S L Allen & Co Box 1106 U  
Philadelphia Pa



The Roller Bearing.

30% to 50%

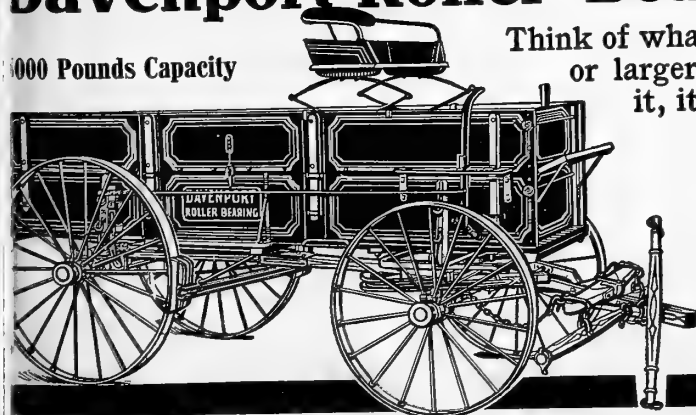
Lighter Draft

## Sell One Horse

and for the selling price buy a wagon that will pull one horse lighter. That is if you are now using three farm horses you can get along with two; if you are using four, three will do your work with a

## Davenport Roller-Bearing Steel Wagon

5000 Pounds Capacity



Think of what that means to you. More trips, easier trips, fewer horses, or larger loads, with the same horses and help. Anyway you figure it, it is a money-saving and a money-making proposition for you.

In the Davenport you have a wagon guaranteed for 5000 pounds capacity, with gears of solid steel, rolled into the strongest forms known and trussed like the modern steel bridge. The wheels are steel with strong, round spokes forged solidly into the hubs and bridge. There is nothing to dry out, rot, shrink or work loose. No tires hot riveted into the tires. There is nothing to dry out, rot, shrink or work loose. No tires to reset, no breakdowns, no repairs. Oil without removing the wheels. Let us tell you all the facts. You should know what these advantages really mean to you. Then you won't be content till you own a Davenport. It will give you more than twice the service of the best wooden wagon made. And it costs about the same. Now write for Package No. 22.

**Davenport Wagon Company, Davenport, Iowa**

## Read This Strong Array of Expert Testimony Regarding Our Latest Spraying Material

# "BLACK LEAF 40"

From O. E. BREMNER  
Secretary of California State Commission of Horticulture:

I am convinced in my own mind that "Black Leaf 40" will prove a great success on young lecaniums and other soft-bodied scale insects, also white fly larvæ (*A. citri*), when used in combination with a small amount of oil emulsion or soap.

I have seen its efficiency thoroughly tested on thrips, and have used the same combination, "Black Leaf 40" and 2 per cent oil emulsion, on red spider with remarkable success.

I have also used "Black Leaf 40" in combination with arsenate of lead for calyx spraying of apples, and not only prevented the attack of codling moth, but completely controlled the curl leaf aphid, which has been such a destructive pest for the past few years.

From W. H. VOLCK  
Entomologist for Monterey and Santa Cruz Counties, California:

I have conducted a considerable number of experiments with "Black Leaf 40," mainly to determine its efficiency in the control of aphids, including the green aphid and the woolly aphid of the apple. All of these tests have proved the material to be highly satisfactory for the purpose mentioned.

I consider your "Black Leaf 40" better for general use than your "Black Leaf" Extract, since the amount of organic matter other than nicotine is reduced to minimum. "Black Leaf 40" can be used without leaving any stains or marks on the fruit, which is strongly to its advantage.

I find that one part of "Black Leaf 40" to 2,000 parts of water containing cresol soap is very effective in controlling all kinds of plant lice.

I shall recommend its use in preference to any other form of extracted or concentrated nicotine.

From FRED L. YEAW  
California Agricultural Experiment Station:

I used your "Black Leaf 40" against soft-bodied insects, using the formula published upon your wrappers; the results were all that could be desired, the spray acting very quickly.

The "Black Leaf 40" would seem to be a very desirable kind of tobacco spray to use, because of its known strength and non-volatile qualities.

From ELMORE CHASE  
Deputy Horticultural Commissioner, Fair Oaks, California:

We have used "Black Leaf 40" straight on a small block of olive trees for the black scale (*Saissetia Oleae*), and after two weeks we found every scale dead on the leaves which did not escape the spray. For aphid it is a complete remedy. We are using a little from one package with distillate emulsion for the scale of the olive.

From PROFESSOR H. J. QUAYLE  
Entomologist California Agricultural Experiment Station:

We have tried the "Black Leaf 40" on plants of various kinds for aphid, and find it entirely satisfactory for killing these insects.

From PROFESSOR C. P. GILLETTE  
Colorado Agricultural Experiment Station:

I have found a thorough application of "Black Leaf 40" in the proportion of 1 to 1,000 to either green apple aphid or the woolly apple aphid will kill 100 per cent of those actually treated.

From GEORGE P. WELDON  
Field Entomologist Colorado Agricultural Experiment Station:

Have experimented with "Black Leaf 40" for the past two seasons, and am satisfied that it is just as effective in killing the various species of plant lice as "Black Leaf" Extract, which has for a number of years been our standard remedy in Colorado for these insects.

From PROFESSOR W. S. THORNER  
Washington Agricultural Experiment Station:

We are trying "Black Leaf 40" in various ways in our experimental work, and have found it very satisfactory so far.

From DR. JOHN B. SMITH  
Entomologist New Jersey Agricultural Experiment Station:

"Black Leaf 40" (Sulphate of Nicotine) proved satisfactorily effective on green plum aphid at the rate of one ounce to eight gallons of water (a dilution of 1 to 1,024).

From H. B. FULLERTON  
Director Agricultural Development, Medford, Long Island:

Your "Black Leaf 40" has proven very valuable to us this year. We have used it in combating aphid, which this season have developed in unusual numbers and representing a very great number of varieties.

From A. W. MORRILL  
Arizona Horticultural Commission:

It is my impression so far that for general purposes the strengths that you recommend for "Black Leaf 40" are about correct.

From GEORGE A. LAMIMAN  
Horticultural Commissioner, Anderson, California:

"Black Leaf 40" seems to be a good remedy for the vine hopper on grapes. It did good work on aphid, also on thrips in general.

From PROFESSOR C. E. SANBORN  
Entomologist Oklahoma Agricultural Experiment Station:

I am very greatly pleased with our experiments in which we used your products.

### Some Details About "BLACK LEAF 40"

"Black Leaf 40" is a concentrated solution containing 40 per cent nicotine by weight, in the form of nicotine sulphate.

"Black Leaf 40" is nearly fourteen times stronger than our "Black Leaf" Tobacco Extract. This means a big saving in handling—particularly over rough roads—one 10½-pound tin producing 1,000 gallons of effective spraying material against green aphid, etc.

Owing to the large dilution, neither foliage nor fruit is stained.

Like our "Black Leaf" Extract, "Black Leaf 40" may be applied when the trees are in full bloom and foliage without damage to either.

Also, "Black Leaf 40" is perfectly soluble in water—no clogging of nozzles.

### PRICES

10½-lb. can, \$12.50; makes 1,000 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine.

2½-lb. can, \$3.25; makes 240 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine.

½-lb. can, 85c; makes 47 gallons, containing  $\frac{5}{100}$  of 1 per cent Nicotine.

These prices prevail at all Agencies in railroad towns throughout the U. S. Write us for the name of our agent nearest you, using the attached coupon.

**The Kentucky Tobacco Product Co.**  
INCORPORATED  
LOUISVILLE, KENTUCKY

MAIL US THIS COUPON  
Kentucky Tobacco Product Co.  
Louisville, Kentucky:

Please send me address of your agent nearest my station.

My Name is

My Address is



Four Year Old Cherry Trees, Not Irrigated

*We Know* and the only way for *You to Know* is for us or someone else to tell you *that* we grow a greater variety of fruit, and of better quality, at

# The Dalles, Oregon

than any other place in the *Great Northwest*, and bear in mind that none of our fruit is irrigated. This is an indication of its superiority, both as to flavor and keeping quality. If you want to raise fruit, you must, in order to succeed, raise the best—this you can do by locating here. The above cut shows a portion of a beautiful 83-acre tract which we have for sale, all in orchard and highly improved, adjoining corporate limits of The Dalles, a city of 7,000 people and rapidly growing. This place is splendidly situated for subdividing.

*Write Us for Particulars*

R. H. WEBER, THE DALLES, OREGON

**I**N a recent interview Mr. F. N. Cummings, manager of the Rogue River Valley Canal Company, said: "Roguelands Inc. has sold more than \$100,000 worth of irrigated orchard tracts since the beginning of the new year. It is true that some of these sales were taken up during December, but every one of them has been closed since January 1. We have interested some of the leading bankers and business men of Spokane, and we believe that we will sell a number of other tracts to Washington people who are now in correspondence with our company. We have actually closed twenty ten-acre contracts in Spokane at an average price of \$550 per acre, or a total of \$112,000. The company will plant the area between the Boulevard, the Agate road and the Pacific & Eastern Railroad, directly northwest of the Niles cottage, to a standard variety of pears. We have been advised by high authority that this part of our land is especially adapted to pears, and we have every reason to believe that we will be able to equal or excel any commercial pear orchard in the valley. These tracts will be cared for and be under the personal supervision of our

experts for a period of five years, at which time they will be turned over to the purchaser.

"Here is a list of some of the Spokane purchasers who have invested in our irrigated orchard tracts: Charles E. McBroom, cashier Exchange National Bank of Spokane, ten acres, \$5,500; W. J. C. Wakefield (Wakefield & Witherspoon, attorneys), ten acres, \$5,500; F. J. Finucane (Holly-Mason Hardware Co.), ten acres, \$5,500; A. Kellett, ten acres, \$5,733; A. E. Griffin, ten acres, \$5,733; D. W. Twohy (president Old National Bank of Spokane), ten acres, \$5,500; Fred Wilson, ten acres, \$5,500; George Cunningham, ten acres, \$5,500; R. T. Olsen, ten acres, \$5,800; E. F. Burns, ten acres, \$5,800; John B. Jordan, ten acres, \$5,500; D. A. Rankin, ten acres, \$5,500; E. M. Brown, Vancouver, B. C., ten acres, \$5,500; E. F. White, ten acres, \$5,700; J. A. McAlpine, ten acres, \$5,700.

"We are expecting a number of visitors during February, and have received dozens of letters from Eastern people who tell us they have decided to locate in the Rogue River Valley. We have many letters from young farmers who are inter-

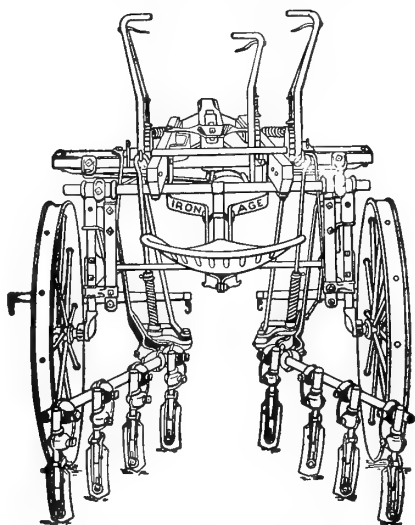
ested in intensive farming, and in such cases we show them what can be done by raising strawberries and cantaloupes between the rows of trees. Last year's experience was so satisfactory that a number of our tracts will be planted to cantaloupes this spring, and it has already been shown that in the future strawberries will be one of our most important products. Medford Rocky Fords and Medford strawberries are destined to rival our apples and pears, and these products will prove to be the stepping stone for the man who wishes to develop an orchard property, for they will bridge him over the time when his orchard is developing, and provide him with a splendid income while he is waiting for the income from his orchard."

Roguelands Inc. is largely a Spokane company, and two of its principal owners are Spokane businessmen. R. K. Neill and P. Welch are directors of the company, and both are men of large affairs and have large business interests.

R. K. Neill is the proprietor of the Grote-Rankin Company of Spokane, which company operates the largest furniture store in Spokane as well as Seattle. He is the president of the Neill

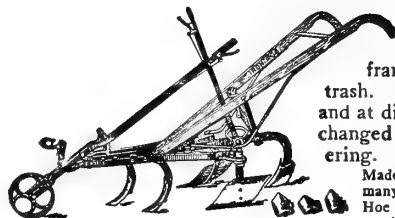
# 75 Years of Quality Production of Iron Age Farm and Garden Implements

Stephen Bateman started the Iron Age business in 1836. He was a farmer himself and knew the farmer's needs. He knew that the progressive farmer always wants the best. He also knew that highest quality in farm and garden implements is always the cheapest in the long run. So he built up the Iron Age business along strictly quality lines. The Iron Age line stands today at the head of the list. This line has always served the farmer well and made a friend of him. Four of the Iron Age line of implements are briefly described below. This line is sold by over 200 agents in the Northwest. The complete catalog, full of illustrations, will be sent postpaid, free of charge, upon the receipt of your name and address. Ask for Catalog No T



**No. 82 PIVOT WHEEL RIDING CULTIVATOR**

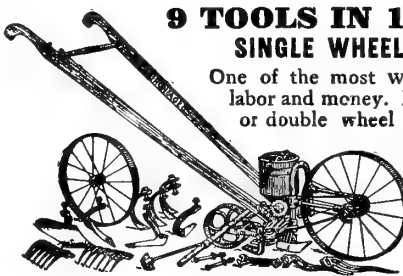
You must cultivate your soil frequently if you expect to get the most out of it. You must have a strong machine and one that is easily operated. It must be convenient of adjustment so as to insure perfectly level cultivation under all conditions. It must be so adjustable as to cultivate deep or shallow as needed. It must do a variety of work. It must suit the potato farmer, the general farmer and the truck gardener. It must be easily set for use in a wide variety of crops so must have a wide range of adjustments. It must be easily guided so that a man or boy can run it either on hills or level ground. This Iron Age Front Wheel Riding Cultivator is all of this and more too. The catalog will prove interesting. It describes this cultivator in detail.



**NO. 6 HORSE HOE AND CULTIVATOR**

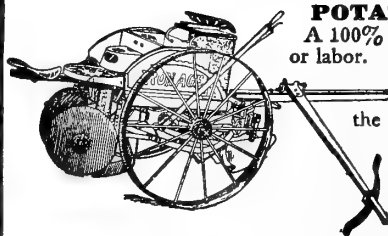
Strong, light and compact. A high steel frame that makes the tool run steady and clear of trash. Several adjustments to side hoes, both sidewise and at different angles. Can be reversed for hoeing and changed from side to side with points forward for covering. As a cultivator expands from 14 to 30 inches.

Made for all sorts of hoeing and all sorts of cultivating—admits of many adjustments to meet different conditions of different vicinities. Hoe standards solid steel. This implement deserves the most careful consideration of all farmers. Described in detail in catalog.



**9 TOOLS IN 1 — NO. 6 COMBINED DOUBLE AND SINGLE WHEEL HOE, HILL AND DRILL SEEDER**

One of the most wonderful machines ever devised — saves time, labor and money. Is simple, strong and convenient. Runs single or double wheel for hoeing, raking, cultivating, plowing, hill and drill seeding, etc. Sows the greatest range of variety of seeds. Distributes small packets with same uniformity as large quantities. Seeds in sight as they pass into furrows. Tool changes instantly from drill to hill or reverse. Drops seeds 4 to 24 inches apart. Adjustments simple and quickly made.



**POTATO PLANTER**—The king of potato planters. A 100% efficiency implement. No waste land, material or labor. Feeds and drops seeds without injury and in the proper place—every time. Plants and fertilizes at the same time. Yet no fertilizer touches the seed.

Iron Age Potato Planter takes many attachments to meet extreme conditions and do special work—such as corn, bean and pea planting, side dressing and ridging. This machine is a money-saver. The catalog tells a lot more than we have room for in this space.

We can give names of some of the most successful farmers in the Northwest who use Iron Age tools

**R. M. WADE & CO.**  
PORTLAND :: :: OREGON

**OLD ESTABLISHED**  
(43 YEARS IN BUSINESS)  
**UP-TO-DATE**



Double your crop yield.  
Double your income.

USE

# Nephi Land Plaster

Famous throughout the West. The dependable brand that has brought results to the scientific and industrious agriculturists of Oregon and the Northwest for more than twenty years. Highest chemical and most desirable physical qualities of any land plaster on the market.

## CAUTION

Insist on NEPHI. Do not risk an experiment.

*Sold by the most prosperous  
dealers in every community.*

**NEPHI PLASTER &  
MFG. CO.**

Main Office: Boston Building  
Salt Lake City, Utah

WRITE FOR BOOKLET

Development Company, which is a large mining corporation, operating placer mines in Mexico. Mr. Neill is also interested in a number of other enterprises, and is one of the best known mining engineers of the Pacific Coast.

Patrick Welch has large Spokane interests, being one of the largest railroad contractors of the Northwest and operating several railroad construction companies. He is one of the largest contractors for the Canadian Trunk, and is now building a large amount of railroad construction for the Hill system. He is a director of the Old National Bank of Spokane and is prominent in other Washington financial institutions.

Editor Better Fruit:

I am interested in fruit growing and take three fruit papers, but "Better Fruit" beats them all. I would not be without it if it cost \$3 per year. Yours truly, Willard L. Fulkerson, Interlaken, New York.

Editor Better Fruit:

The four copies to hand, and in reply to your letter will say, you speak of making it better. I don't see how you can do it. It is a wonderful paper now. Yours, F. W. Steubine, Auzora, Missouri.

Editor Better Fruit:

I am sending you herewith the fruit classification as adopted by the Washington State Horticultural Association. The new classification gives every section of the Northwest equal opportunity, owing to the fact that the favored apple of each locality has been recognized, and the competition placed on each separate variety instead of on collections. Of course we will have collective exhibits for growers, but the great value of this classification to this fair is the fact, as stated before, that it places all localities upon an absolutely equal basis and gives us the competition we desire among the actual producers. Sincerely yours, Jno. W. Pace, secretary, North Yakima, Washington.

Your committee appointed to consider the matter of classification of apples and fruits for exhibition and premium purposes at the state and other fairs, after having given due consideration to the favored products of all localities and sections of the state and Northwest, beg leave to report the following conclusions, and suggest to fair managers that they embody the same in their catalogues:

1. That we deem the twelve apples named in section 1 as first in commercial importance and prominence: Jonathan, Rome Beauty, Wagener, Spitzenberg, Winesap, Yellow Newtown, Northern

## Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

## LUMBER

*Lath, Shingles, Wood, Etc.*

HOOD RIVER, OREGON

**FRUIT** Western  
Soft Pine.  
Light, strong  
and durable.

"Better Fruit"  
subscribers  
demand the  
"Better Box." **BOXES**

CAN MAKE TWO CARLOADS DAILY

**Washington Mill Co.**

Wholesale Manufacturers

Spokane, Washington

## A NEW INDUSTRY

The Utilization of Wood Waste by Distillation. A general consideration of the new industry, including a full description of the distilling apparatus used and the principle involved, also methods of chemical control and disposal of the products, first edition illustrated by seventy-four engravings, 156 pages. This book is cloth bound. It will be sent to any address, postpaid, on receipt of \$3.20.

A hand book on fermenting, distilling and denaturing alcohol from farm products and wood waste. Trade secrets, no licenses, only a permit, and that is furnished free. Red tape removed, including free tax denaturing alcohol laws. A plain statement of facts for those interested. The latest just out, 280 pages, 60 illustrations, 12mo. cloth. Price \$1.20, postpaid.

Free Tax Industrial Alcohol—Corn stalks and cobs, waste vegetables and wood waste, shavings and old saw dust are now converted into industrial alcohol at ten cents per gallon; sells for fifty cents. Unlimited demand in every village for motors, automobiles, cooking stoves, etc. A five-gallon apparatus makes one gallon per hour; is simple as a corn mill, almost automatic, inexpensive; pays for itself every month. No tax, no licenses; only a permit, and that is free. Orders come in fast. Write today for free farmers' circular No. 9. Address

The Wood Waste Distilleries Company, Inc.  
Wheeling, West Virginia, U. S. A.

## Denatured Alcohol in Solid Form

Cleveland Special Dispatch—September—A well-known Wheeling, West Virginia, chemist has succeeded in producing chunks of denatured alcohol in crystal form, by means of a small infusion of certain acids, very closely resembling physiologically the effects of ethyl alcohol distilled from sawdust. The method employed and the results obtained are somewhat similar to the crystallizing of rock candy or that of saccharine, containing as it does 350 times the sweetening strength of cane sugar, so this alkaloidal crystallized alcohol contains many times the strength of the ordinary denatured fluid alcohol. They will yield 194-proof denatured alcohol, with a greater heating and cooking power for stoves than gasoline, and it is absolutely non-explosive.

A sample can containing 50 solid cubes, a stove and the secret formula showing how simple it can be made at home, will be mailed to you, postpaid, on receipt of \$5.00, or express C. O. D. Address

**The Wood Waste Distilleries Co.**

INCORPORATED

DEPARTMENT H

Wheeling, West Virginia, U. S. A.

# Crop Specialist Tells How To Make Your Land Pay \$500 to \$1200 Per Acre



That may sound like a story—but I am here to tell, to show and to prove that a profit of from \$500 to \$1,200 per acre is within the reach of every farmer or grower in the country. I have made this remarkable record on my farms for several years—other farmers who have adopted my methods are also succeeding—the same success is within your reach. The secret of this wonderful profit is scientific and intensive farming, special preparation of soil and the growing of special crops.

## Write For My Two Free Books

Book No. 1 is my intensive farming book, not a catalog, published to sell for 50c; send and get it now free; tells of my experiments and experience for the last 32 years. It has taken 32 years to write and to complete it. If you will at least spend 32 minutes reading it it will prove to be the most profitable time you ever spent. This book explains my special method of soil preparation, how to rotate crops, how to make your land pay big profits as I have done by growing my Grandpa's Pride Globe Onions which have produced an average profit of \$15,000 on 40 acres and other special crops.



Book No. 2 gives the history of the Alton Improved Red Raspberry which has produced an average profit of \$1,200 per acre on account of its remarkable size, flavor, long fruiting season and vitality.

Write for my books today, they are free and will interest the man who is looking for big profits.

**A. O. GILBERTSON, CROP SPECIALIST,**  
Box 620  
Mason City, Iowa.

## I Have Farmed For 32 Years

During this time I have experimented, my one aim was to produce special crops that would be out of the ordinary in quality and profit. One of the most successful experiments was with raspberries. Instead of growing the ordinary variety and taking an ordinary profit I propagated a special variety now known as the Alton Improved Red Raspberry that has stood the winters of Northern Minnesota, North and South Dakota and even as far north as Canada, without the least winter protection. The Berry is especially remarkable for its size and delicious flavor as well as for its long fruiting season, which on an average extends over a period of three months. If you only have a city lot or if you have a farm investigate this wonderful, large, delicious berry now.



Spy, Baldwin, Gravenstein, White Winter Pearmain, Arkansas Black, Grimes Golden.

On the above we suggest that where fairs offer in excess of \$20 for each variety the exhibits be made in five-box (single tier layer), growers to be the exhibitors, and that first, second, third and fourth prizes be offered.

2. That we deem next in importance the ten varieties named in section 2, and, where possible, should also be shown in single tier boxes or trays, entries to consist of three to five trays, and exhibitors to be growers: King of Tompkins County, Gano, Delicious, Fameuse, Stayman Wine-sap, Winter Banana, McIntosh Red, Red Cheeked Pippin, Ben Davis, Wealthy.

3. That all other varieties be shown in plates for educational and demonstration purposes, and that the premiums on the same be made the minimum of what the fair offers on plate lots, with \$1 for first and a medal or trophy for second, as an example. Two premiums only to be offered.

4. That the classification of pears, peaches and all other fruits be referred to Professor Thornber, as representing this association, to be taken up and agreed upon with the fair secretaries.

5. That we deem this apple classification of great importance to growers and exhibitors of this entire section, and we ask the adoption of the same by fairs, so far as their resources will permit.

6. We believe a uniform classification of fruits will be of benefit to growers and exhibitors, and especially to those who prepare exhibits for one or more of the Northwestern fairs. We call attention to the fact that in many other divisions the fairs are adopting a uniform classification.

7. We endorse the plan to eliminate the county collective exhibit, and instead make the awards to the grower, so far as possible, as under such a plan the grower will receive the premiums as well as the benefits of the publicity.

The committee making the above recommendations, representing all parts of the state, make the findings unanimous.

The elimination of the county collective exhibit will enable the Washington State Fair to offer its apple premiums in a manner that must interest every section of the state. For the reasons:

1. It is made a growers' contest.
2. The various localities, having a favored apple, will be able to compete and win something.
3. It will do away with the idea that it is useless to compete with Yakima County and Valley, as existed under the county collective premium.
4. It makes the grower the exhibitor, rather than the dealer or collector, putting the premium where it belongs, and also the benefit of any publicity.

In the making of the schedule it is apparent that the committee took into consideration the apple products of the various sections of the Northwest, recognizing the three of the Coast, three of the dry unirrigated sections, three of the irrigated sections and three general. These are the apples of the first commercial section. The second section comprises ten varieties in which every portion of the apple growing Northwest can compete.



## Simplex Self-Balancing Link Blade Cream Separators

Have you seen the 1910 Model Simplex? Note the solid, heavy frame and the convenient height of both the supply can and the crank. This machine is the result of years of experimental work and has the best features of the 1909 Separator (the Link Blade skimming device, which has been tried and proved its worth as is shown by numerous attempts to imitate, showing that other manufacturers appreciate the skimming qualities of the LINK BLADES and the self-balancing bowl), together with the new low-down supply can and extra heavy base and the ease of running.

The self-balancing feature has been on the market for about two years, and is a perfect success. It does away with the old style mechanically balanced bowl, which had to be sent to the factory to be rebalanced. The ease of running in this machine is not equalled. Note the large skimming capacities relative to prices shown in table:

No.	Capacity per hour	Price
5.....	500 lbs.	\$ 75.00
7.....	700 lbs.	80.00
9.....	900 lbs.	90.00
11.....	1,100 lbs.	100.00

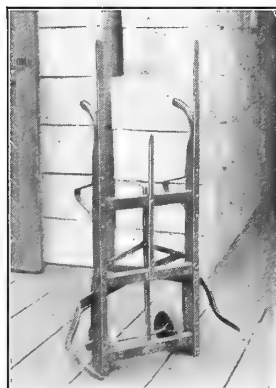


## MONROE & CRISSELL

General Agents

Complete Line of Dairy Machinery and Supplies

145 Front Street, Portland, Oregon



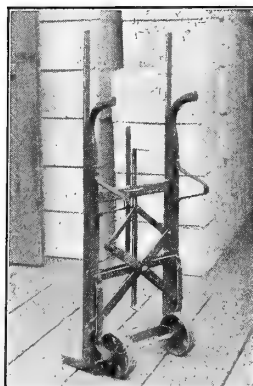
## The PERFECTION CLAMP TRUCK

Patented 1910 in U. S. and Canada

Saves labor, jar and breakage. Indispensable to fruit dealers and growers. Write for circular giving descriptive details and prices f.o.b. Seattle, Portland and Vancouver, B. C.

Manufactured by

**SAMSON & ARCHIBALD**  
Vernon, B. C., Canada



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## Do Your Buildings Need Paint?



Examine your buildings and see if they need painting now. If they do, don't put the work off because you believe linseed oil will drop in price. There is no hope of it. Besides, the price of paint made-to-order of

## "Dutch Boy Painter"

White Lead and pure linseed oil is lower than you may think, if you have not actually figured it. Get prices from your dealer on the ingredients of this old-fashioned, long-wearing, pure white lead paint. You will find it cheaper than any other paint you'd think of using.

Write for our free "Painting Helps No. 230"

## NATIONAL LEAD COMPANY

An office in each of the following cities:

New York Cleveland Chicago  
St. Louis Boston Buffalo  
Cincinnati San Francisco  
(John T. Lewis & Bros. Co.,  
Philadelphia)  
(National Lead and Oil Co.,  
Pittsburgh)





Spray Your Fruit for Codling Moth with

## Grasselli Arsenate of Lead

IT IS THE BEST

We are now ready to demonstrate the correctness of our statement from a practical standpoint.

We give you the following names and addresses of the winners of the Grand Sweepstakes prize of \$1,000 for the best car of apples shown at the National Apple Show, Spokane, Washington:

1908—M. Horan, Wenatchee, Washington.

1909—Tronson & Guthrie, Eagle Point, Oregon.

1910—C. H. Sproat, Hood River, Oregon.

All sprayed with Grasselli Arsenate of Lead.

Bear in mind that this material was used at three different points, and during three different seasons. Does this not demonstrate to your satisfaction the superiority of Grasselli Arsenate of Lead, both as to locality and climate in which it may be used?

If so, it will not be necessary to ask yourself the question, "What Arsenate of Lead shall I use this season?" You will order Grasselli Brand.

Do not buy Arsenate of Lead on arsenic contents alone. Bear in mind when buying this spray that lead should be given equal consideration with arsenic, because it increases the adhesive properties and reduces to a minimum foliage injury.

### DISTRIBUTERS IN THE NORTHWEST:

Wenatchee Produce Co., Wenatchee, Washington

Inland Seed Co., Spokane, Washington

Hardie Manufacturing Co., Portland, Oregon

Samuel Loney & Co., Walla Walla, Washington

Missoula Drug Co., Missoula, Montana

Western Hardware & Implement Co., Lewiston, Idaho

Salem Fruit Union, Salem, Oregon

Hood River Apple Growers' Union, Hood River, Oregon

C. J. Sinsel, Boise, Idaho

Yakima County Horticulturists' Union, North Yakima, Washington

Darrow Bros. Seed & Supply Co., Twin Falls, Idaho

Rogue River Fruit and Produce Ass'n, Medford, Oregon

And in all consuming districts

Write the above, or

**H. N. LYON, Northwestern Representative**

505 Concord Building, Portland, Oregon,

for name of nearest distributor

### THE GRASSELLI CHEMICAL CO.

Established 1839

Main Office, Cleveland, Ohio

St. Paul, Minn.

Chicago, Ill., 2235 Union Court

New York City, 60 Wall Street

St. Louis, Mo., 112 Ferry Street

New Orleans, La.

Cincinnati, Ohio

Birmingham, Ala.

Detroit, Mich.

## Prevent Apple Scab without damaging your fruit

THERE are two sprays for controlling Apple Scab and Leaf Spot: Bordeaux Mixture and Lime-Sulfur Solution.

The chemical composition of the first is such that while it checks the disease, it is liable to injure the fruit. The russeted, rough appearance resulting from its use is as detrimental to the crop as the diseases which infest them. The best and safest way to avoid this condition is to use

### SHERWIN-WILLIAMS LIME-SULFUR SOLUTION

When used as directed this preparation will not harm your fruit or the foliage, because it is a concentrated combination of lime and sulfur and has nothing injurious in its make-up. S-W Lime-Sulfur is a strong, properly balanced solution, containing practically no sediment—does not crystallize readily, can be used cold and is much more convenient and satisfactory than the home-boiled product. If your trees have Scab, your fruit will be better and your profit larger if you spray with Sherwin-Williams Lime-Sulfur Solution, first as a dormant spray at 1-11, and later after the leaves have opened, at two-week intervals, at 1-40. Write for book described below.

**This Valuable Book, Telling How and When to Spray, Sent Free**

Every fruit grower should have a copy of "Spraying, a Profitable Investment." There are many insects infesting his crops and they are not all easily controlled. It is important that you know which ones are doing the damage and how to prevent further loss. "Spraying, a Profitable Investment," is a 120-page book, containing over fifty illustrations and describing over one hundred pests—their habits and some practical methods for keeping them under control.

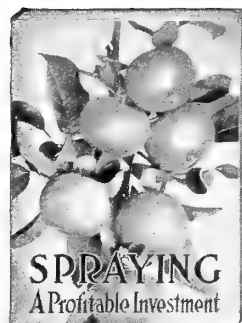
The book is compiled from data gathered by experts and will prove a most efficient guide for the gardener and fruit grower. A great amount of time and money is wasted each year by spraying at the wrong time or with an inadequate material. How much do you waste?

Write for this book and save money. Mailed free for the asking. Address:

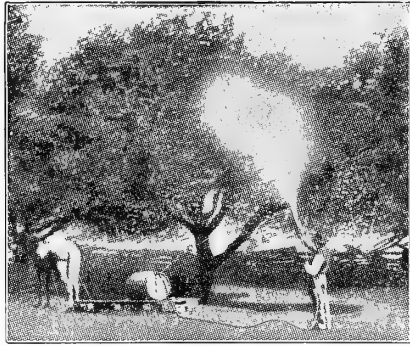
### THE SHERWIN-WILLIAMS CO.

MAKERS OF HIGHEST GRADE INSECTICIDES

707 CANAL ROAD, N. W. 1905 CLEVELAND, OHIO



**FARMERS CAN HAVE RUNNING WATER.**  
The one big advantage usually claimed for the city is running water where needed. There is no good reason why nearly every country place should not enjoy similar advantages in house and grounds and have water for irrigation and the many other uses to which running water can be profitably put. There are few places not located within a mile of a stream or pond. With a fall of two feet or over a hydraulic ram can be installed to pump to a



### The Best Spray Pump

Sprays the tallest fruit trees from the ground. Special nozzle for grape vines, shrubs, etc. Sprays quickest and best. Does the work in half the time and does it thoroughly. Always ready. Used with bucket, barrel or tank. Lasts a lifetime. No leathers to dry up, wear out, or make trouble.

### Standard Spray Pump

Warranted for 5 Years. Price \$4.00.

It will not cost you a cent to try it. Our special offer gives complete details. Write for it today and we will also send our illustrated circular showing how this pump pays for itself many times over the first season.

**The Standard Stamping Co.**  
204 Main Street Marysville, O.

height of thirty feet for every foot of fall. It will work day and night without attention. The operating expense will be the renewal of rubber valves every year or so. The Rife Engine Company claims a pumping efficiency for its Rife ram of 60 to 90 per cent, depending on ratio of fall to pumping head. Any size ram, pumping from 3 to 700 gallons a minute, can be obtained. The big advantage over all others claimed for the Rife ram is its power to pump air with the water and against a 60-pound pressure in a pneumatic tank. This air supply also prevents water-logging and destruction of pipes by concussion. This is a very important feature and should make this ram markedly superior to all others. Rife rams are in constant use all over the world. It is claimed that nearly all the testing laboratories in colleges and institutions here and abroad, over forty of our big railroads, and hundreds of private estates have been using Rife rams successfully for years. By addressing the Rife Engine Company, 111 Broadway, New York, catalogues, complete plans and estimates for any place will be gladly furnished free.—Contributed.

**Editor Better Fruit:**

Herewith I enclose \$1 for renewal of my subscription to "Better Fruit." I don't see how you can produce such an up-to-date publication for the money. Yours for a prosperous New Year, W. Ferrybough, Seattle, Washington.

**Editor Better Fruit:**

I have been very much pleased with the "Better Fruit," and have received a great amount of good information through the many editions, and it is read by the whole family, and could not get along without it. It is the best publication I ever have had on the fruit question. Very truly yours, E. S. Burr, Oglesby, Illinois.

**Editor Better Fruit:**

Enclosed find \$1 for my subscription to "Better Fruit." I feel as though I could not get along without "Better Fruit." Wishing you success, I am, yours truly, A. T. Lathrop, Central Point, Oregon.

# Planet Jr.

The greatest labor-savers and time-savers ever invented for the farm and garden! A Planet Jr does the work of 3 to 6 men; and does it better. Makes you independent of indifferent help. Made by a practical farmer who knows the every-day need of other farmers. Thirty-five years' experience. Fully guaranteed.

**No. 4 Planet Jr Combined Seeder and Wheel-Hoe** saves time, labor, seed and money. Almost all useful garden implements in one. Adjustable in a minute to sow all garden seeds, hoe, cultivate, weed, or plow. Pays for itself quickly, even in small gardens.

**No. 8 Planet Jr Horse-Hoe and Cultivator** will do more things in more ways than any other horse-hoe made. Plows to or from the row. A splendid furrower, coverer, hiller, and horse-hoe; and unequaled as a cultivator.

The 1911 Planet Jr catalogue is free. It illustrates and describes 55 different implements for the farm and garden. Write for it today.

**S L Allen & Co**  
Box 1106U Philadelphia Pa

# THE BECK POWER SPRAYER

Some reasons why you should use a BECK POWER SPRAYER

**First**—The wide range of capacity possible to secure from the "BECK" line. Our smallest outfit, No. 200, is our Duplex pump and 2-h.p. engine, and has a capacity of 7 gallons of solution per minute. Our Duplex outfit No. 203 has a capacity of 9 gallons per minute and will supply six large round angle nozzles. No. 300, our Triplex outfit, will supply eight angle nozzles with a capacity of 12 gallons per minute. The largest power outfit manufactured is our Triplex No. 304, with a capacity of 15 gallons per minute.

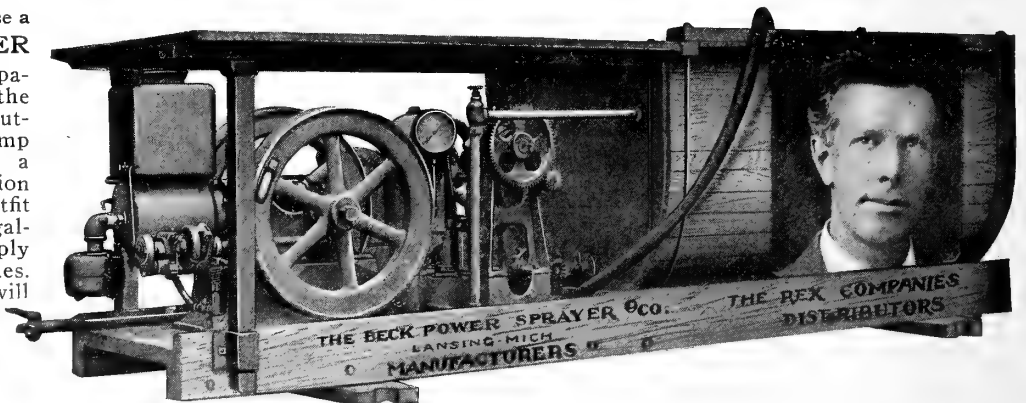
This machine will supply four open bordeaux nozzles at 300 pounds pressure. **Second**—We are the first firm to manufacture a line of pumps that will maintain an actual working pressure of 300 pounds. You know that this means more rapid work, and an economy of spray solution that can be obtained in no other way. No danger of breaking the pump, for it is tested to withstand a pressure of 500 pounds before it leaves the factory. The balance of the waterways with the displacement of the plungers and the passage capacity of the valves makes the pumps absolutely free from air cushions, and means that a rapid development of a steady high pressure is always possible.

**Third**—We had the only outfit at the National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910, that could and did take the 30-minute test at a pressure of 300 pounds. In this test the "BECK" was the only machine that ran the full time of the trial without a stop or engine trouble, and it led its class by a score of 15 points over its nearest competitor, in capacity and general operation—the important features of a power outfit.

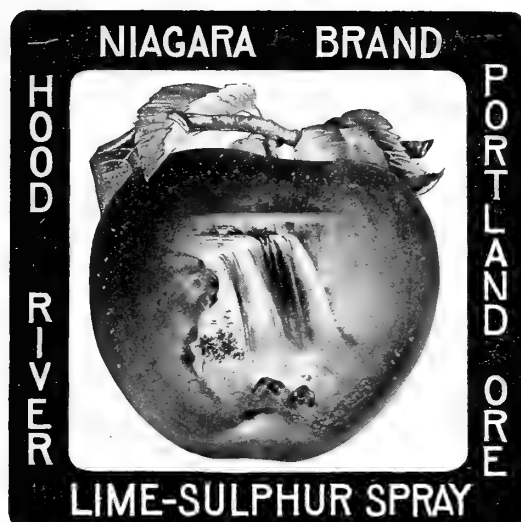
Mr. Grower, we know that you will want real reliability in your outfit, and we ask for a careful investigation of our machines.

WRITE FOR CATALOG AND PRICE LIST, MENTIONING "BETTER FRUIT"

**THE BECK POWER SPRAYER COMPANY, Lansing, Michigan**







## A comparison for your consideration

	Total Lime	Total Sulphur
Sample No. 1 . . . . .	10.73	26.63
Sample No. 2 . . . . .	11.94	30.03
Sample No. 3 . . . . .	12.00	29.21
Sample No. 4 . . . . .	12.12	23.98
Niagara Brand . . . . .	19.65	31.44

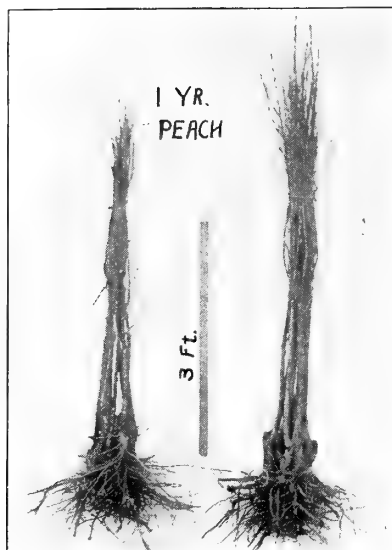
## HERE ARE THE FACTS

THEY show that NIAGARA BRAND LIME-SULPHUR SPRAY is a superior article—that it contains more lime and more sulphur than the others. You cannot afford to take chances with your sprays. Get the best right at the start, even if it costs a little more. Niagara Brand has been adopted generally by the Apple Growers of the Hood River Valley. The best spray produces best results. It shows up at picking time. The better the spray the more apples. And Arsenate of Lead too. The very best brands are Niagara and Triangle Brands. We are exclusive selling agents for these brands, and also for Bean Spraying Machinery. The best on the market. Send for our free booklet, "Successful Spraying." It contains much valuable information.

# Hood River Spray Manufacturing Company

Postoffice Box 74A

Hood River, Oregon



# Yearling Peach Trees

Our facilities for growing good trees are, we think, unsurpassed. The reservation soil is of the best, our growing season opens early, and, with the long, warm summers, our trees put on a magnificent growth.

The root system of our trees is our chief pride, for this is the foundation on which every orchard tree is built.

It takes more than soil, more than water and more than sunshine to produce roots. It takes persistent toil of horse and man, with modern cultivators, to produce results. We never cease working until our trees are fully matured.

We never water trees late. That's why the wood fiber is thoroughly hardened. Many growers, in their effort to produce height, keep the tree growing too late. We prefer quality to length, and results prove we are right. In this respect we

have a marked advantage over nurserymen whose trees are grown in a rainy climate. We control the moisture absolutely, never watering late, and in that way letting nature ripen and harden the fiber, while in certain sections a dry summer is followed by early fall rains, which start a new wood growth, making it almost impossible to harden the fiber before the tree must be dug.

Write us your wants. If we can't supply your needs we'll tell you so. We keep a careful record of our stock, and do not knowingly book an order for trees we cannot supply.

*Toppenish Trees are Unsurpassed*

## Washington Nursery Co.

We still have a supply of most staple varieties in apple, such as

Winesap	Arkansas Black
Newtown	Delicious
Spitzenberg	Gano
Jonathan	Northern Spy
Rome Beauty	Wealthy
And many other	good sorts.

### In Peach We Have

Elberta	Fitzgerald
Early Crawford	Foster
Late Crawford	Hale's Early
Carman	Slappy
Salway	Yellow St. John
Triumph	And many others.
Charlotte	

### In Pear

Bartlett	B. de'Anjou
Comice	

Besides many of the other varieties called for in smaller quantities for home orchards.

### In Cherry

Bing	Lambert
Centennial	And many others.
Early Richmond	

### In Apricots

Moorpark	Blenheim
Royal	And other staples.
Tilton	

#### Editor Better Fruit:

I don't want to miss a single number of "Better Fruit." I consider every number worth the price of the paper per year. The last number was a hummer. Yours truly, T. A. Wright, Attalia, Washington.

#### Editor Better Fruit:

Please do not let me miss a copy of "Better Fruit," and, if necessary, date my subscription back. I would be lost without it. "Better Fruit" deserves a successful year, which I hope will be fully realized. Very truly yours, Frank M. Cox, Chicago, Illinois.

#### Editor Better Fruit:

The unanimous sentiment of the fruit growers of the Northwest favors the establishment of a standard box for our apples and pears. This sentiment was voiced at the meeting of the Washington State Horticultural Association recently held at Prosser, and also at the general meeting of the three Northwestern states held at Portland to discuss various horticultural matters. We feel that Eastern growers are jeopardizing the interests of the Northwest fruit growers by constantly bringing up such obnoxious bills as the Lefean bill, and prior to that the Porter bill, both of which were to create a size

of box different from ours, the effect of which would be to make the fruit packed in our standard boxes sell on the Eastern market under a handicap. I enclose herewith a copy of the law in the State of Washington which recognizes our Northwest standard box, and I would urge that you agitate this matter in your state with a view to securing the enactment of a similar law in Oregon.—E. F. Benson, chairman legislative committee, Washington State Horticultural Association.

An Act to create and establish a standard size of certain fruit boxes for the State of Washington.

Be it enacted by the Legislature of the State of Washington:

Section 1. There is hereby created and established a standard size for apple boxes and pear boxes for the State of Washington.

Section 2. The standard size of an apple box shall be eighteen inches long, eleven and one-half inches wide, ten and one-half inches deep, inside measurement.

The standard size of a pear box shall be eighteen inches long, eleven and one-half inches wide, eight inches deep, inside measurement.

Passed the Senate February 10, 1903.

Passed the House March 2, 1903.

Approved by the Governor March 6, 1903.

## Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

*Ask the People Using Our Boxes About*  
**Quality and Service**

WE MAKE EVERYTHING IN FRUIT PACKAGES

### Multnomah Lumber & Box Co.

Jobbers of Pearson Cement-Coated Box Nails

Portland, Oregon

HEADQUARTERS FOR  
**CENTURY**  
**SPRAY PUMPS**  
Hose, Nozzles, First-class Plumbing Supplies

### C. F. SUMNER

Successor to Norton & Smith

HOOD RIVER, OREGON

"Diamond Quality" True To Name **Strawberry Plants**  
are healthy, vigorous and heavily rooted, with large full crowns

Both of these Berries were "Made in Oregon" None Better have ever been offered

**"GOLD DOLLAR"**

Earliest and Best of All Early Strawberries

**"NEW OREGON"**

Handsome, Heaviest Yielding. Most Uniform Main-Crop Berry

Our Select Strains are the true ones, Our Plants the Best



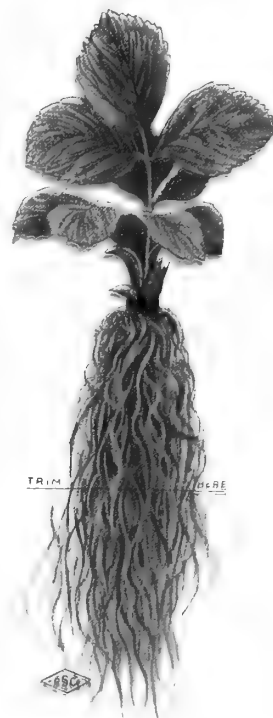
"GOLD DOLLARS" from photo greatly reduced

WE ALSO OFFER  
**CLARK, MAGOON  
MARSHALL  
WILSON, GANDY  
ADMIRAL DEWEY**

These are varieties of real merit—sure croppers that give satisfaction. ORDER NOW. WESTERN VARIETIES ARE BEST FOR WESTERN PLANTERS

SPECIAL—Pot or Field Grown Plants will be ready for August Delivery. Write for quotations on large orders

For description and prices of Strawberry Plants, Nursery Stocks, Spray Pumps and Orchard Equipments, Seeds, Fertilizers, Poultry and Bee Supplies, ask for our 1911 General Catalog and Seed Planters Guide No. 200—the one complete Catalog for the careful buyer.



"Diamond Quality" Strawberry

Plants are packed in ventilated crates of five hundred each. Crowns up. Weight about 30 lbs.



**PORTLAND SEED CO., Portland, Oregon**

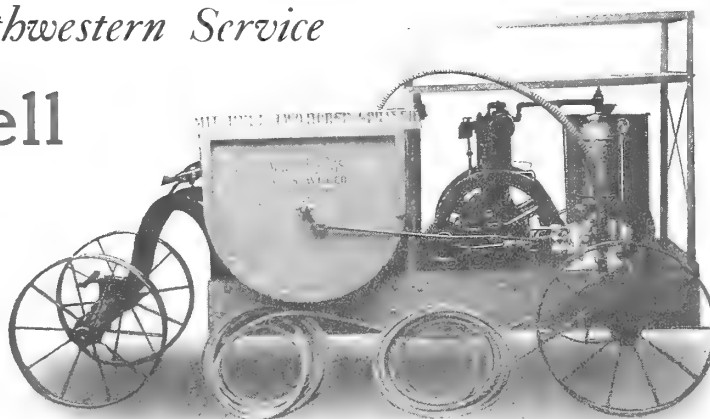
32-page Strawberry Book Free

*Two Sprayers Built for Northwestern Service*

## Improved Mitchell Power Sprayer

Capacity  
Four Nozzles under Two Hundred  
Pounds Continuous  
Pressure

COMPACT AND STRONG, LOW DOWN,  
EASILY TURNED IN SMALL SPACES



**Mitchell, Jr.** One Horse Power Sprayer

Supplies Two Nozzles with Pressure of Two Hundred Pounds. A Stover Gasoline Engine and A Myers Pump—A combination impossible to beat

**Mitchell**  
LEWIS & STAYER CO.

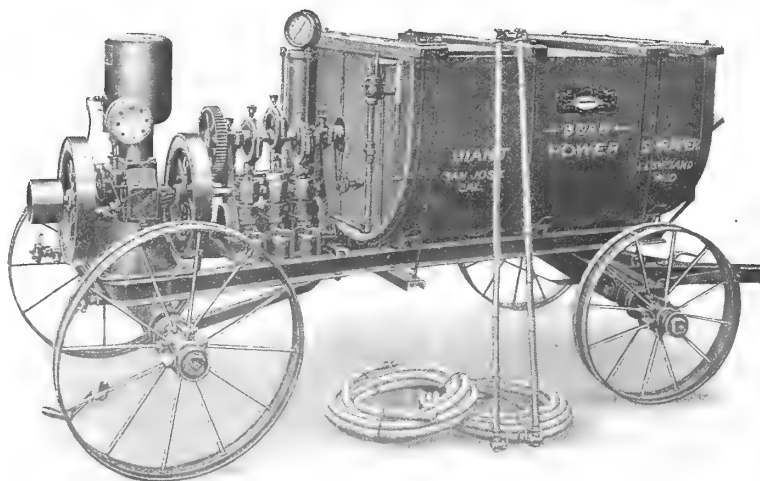
PORTLAND, OREGON  
SPOKANE, WASHINGTON  
BOISE, IDAHO



WRITE FOR NEW SPRAY CIRCULAR—ITS FREE

# BEAN SPRAY PUMPS

FIRST IN  
POINT  
OF  
TIME



FIRST IN  
POINT  
OF  
MERIT

You're ready now to decide on a spraying outfit. You're not debating the advisability of a sprayer—you've settled that long ago. But when it comes to the actual choosing of an outfit the average fruit grower is absolutely at sea. His confusion is excusable, too. There are so many spraying outfits on the market, so many claims and counter claims, and such extravagant advertising that the problem confronting a prospective buyer is indeed trying.

For over a quarter of a century, now, the Bean Spray Pump Co. has been manufacturing spraying outfits. It was just about twenty-six years ago that John Bean invented the spray pump having an air chamber, and erected the first spray pump factory in the United States. Since that time there have been at least thirty different sprayers put upon the market—some good, some fairly satisfactory and some absolutely worthless. Some disappeared from the market almost as soon as they were introduced, some were heard of for several years and a few of the best ones still survive. But through all these years Bean Spray Pumps have been steadily produced, and today you will find them in use throughout the fruit-growing world.

Some twenty years ago we began to furnish our pumps with porcelain lined cylinders. Immediately competitors began to warn fruit growers against them. "They are impractical," they said. "The porcelain will soon crack and chip off," "Porcelain lined cylinders will never prove satisfactory."

Despite these ridiculous assertions, we have yet to find the first Bean porcelain lined pump cylinder that has not given satisfaction.

We use bell metal ball valves in all our pumps. However, the idea has been copied, and you'll find this excellent feature in other pumps today. But our patents are such that other manufacturers cannot use our easily removable seats and covers. In all other pumps except ours you'll find that the seats and covers screw in. Ours do not. Bean seats and covers can never corrode tight—whereas, we have often actually had to chop out the valves from some pumps that we have taken in on exchange for our outfits. Any orchardist who has ever used a spray pump knows what it means when we say that a Bean valve can be reached in ten seconds.

There are no stuffing boxes in any of our pumps. Hence there can be no stuffing box trouble—no leaking,

and squirting, and endless temper-trying bother.

Do not misunderstand us. We do not claim to have the only good line of spray outfits. We do claim, however, that no other line embraces so many excellent features, and no line is so altogether complete. The Bean line ranges from the smallest hand pump to the largest power outfit. Our Bean Magic Pump is the only hand pump that one man can operate continuously at high pressure.

Read a detailed description in our new catalog.

All Bean Power Sprayers have steel platforms, standard makes of engines, perfect agitation, low speed, large capacity, and are carefully tested for high pressure. All parts are made through jigs and templates, and may be ordered by catalog numbers. The various parts are, therefore, easily replaced, which means that when you own a Bean—you are liable for no big repair bills.

Decide on a Bean and you'll decide right. We deliver from nine different points in Oregon, Washington, Utah, Idaho and Colorado, and all orders are promptly handled. If there is no Bean agent in your town write direct to us for quotations and our new 1911 catalog. Tell us what kind of a sprayer you're interested in.

## Bean Spray Pump Co.

213 W. Julian Street, San Jose, California

**"EVERYTHING FOR SPRAYING"**

WRITE FOR YOUR COPY OF OUR CATALOG

EASTERN FACTORY: CLEVELAND, OHIO



VOLUME FIVE

NUMBER TEN

10 CENTS  
A COPY DOLLAR A YEAR

---

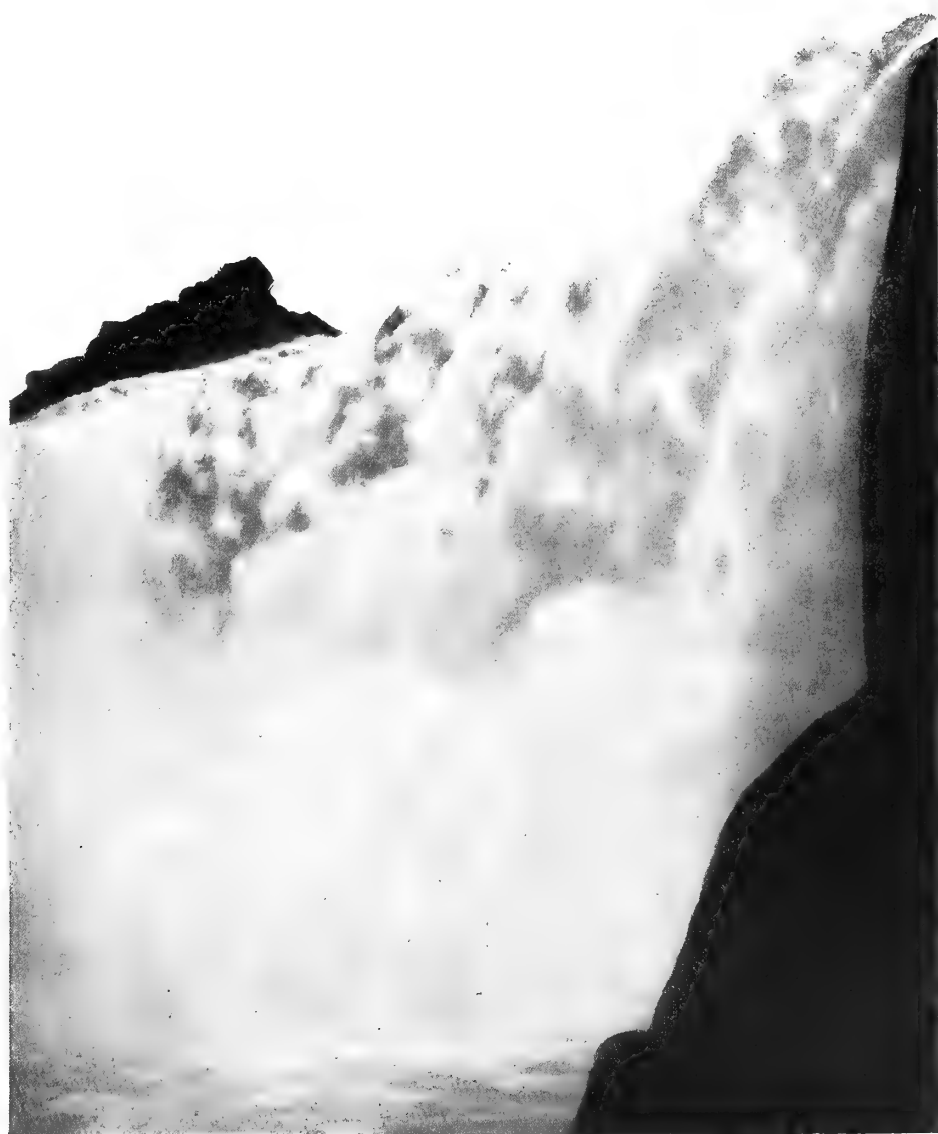
OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

---

# BETTER FRUIT

*APRIL 1911—IRRIGATION EDITION*

---



*Courtesy of Twin Falls North Side Investment Co., Ltd., Jerome, Idaho.*

SHOSHONE FALLS, IN SOUTHERN IDAHO, THE NIAGARA OF THE WEST  
55 FEET HIGHER THAN NIAGARA FALLS

---

PUBLISHED BY BETTER FRUIT PUBLISHING COMPANY, HOOD RIVER, OREGON

**Own an Irrigated Fruit Orchard**

*in the famous*

# Bitter Root Valley

**And Provide an Annuity for Old Age**

We will plant and take care of the land during the growing period, turning over to you a bearing orchard, which will thereafter yield a competence for life. Easy terms

Send for Literature

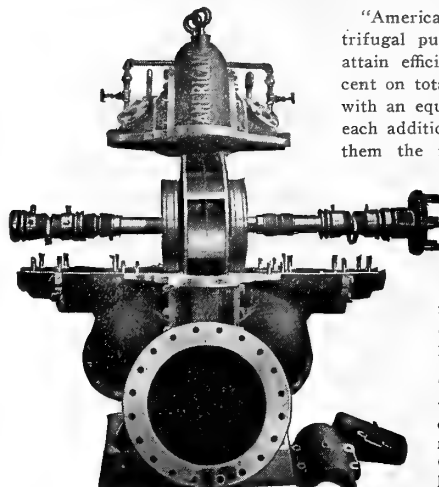
**Bitter Root Valley Irrigation Co.**

Hamilton, Montana

First National Bank Building, Chicago

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
in 1909 to pumps were awarded to

## **"AMERICAN" PUMPING MACHINERY**



"American" single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

"American" centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for "Efficiency Tests of American Centrifugals," by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## **The American Well Works**

General Office and Works: Aurora, Illinois, U. S. A.  
Chicago Office: First National Bank Building

PACIFIC COAST SALES AGENCIES:

70 FREMONT STREET, SAN FRANCISCO  
341 SOUTH LOS ANGELES STREET, LOS ANGELES  
SECOND AND ASH STREETS, PORTLAND, OREGON  
1246 FIRST AVENUE SOUTH, SEATTLE  
305 COLUMBIA BUILDING, SPOKANE

# *Irrigation is King—*

and the King of all Apples is grown in

# Spokane Valley

We received "THREE FIRST PRIZES" at the Third Spokane National Apple Show, held in Spokane November, 1910, which is conclusive evidence that we produce as high grade apples as are produced anywhere in the Northwest.

In addition to this, we have an ideal climate, best of transportation, and in view of the fact that our properties are located two and a half to twelve miles from the Queen City of the Inland Empire, "SPOKANE," with a population of over one hundred thousand, affording unexcelled markets, with very best social and educational advantages, this should appeal to anyone looking for a comfortable as well as a profitable home.

Why not invest in land with all these advantages, obtainable for less money than can be bought in other districts.

*Write for Booklet, "Trip Through the Spokane Valley."*

## **Spokane Valley Irrigated Land Co.**

Incorporated

NO. 401 SPRAGUE AVENUE

SPOKANE, WASHINGTON

# WHAT HAS THE NORTHWESTERN FRUIT EXCHANGE ACTUALLY ACCOMPLISHED?

SINCE ITS ORGANIZATION, JULY 29, 1910  
IT HAS SOLD

## 687 Cars to Buyers in 124 Different Markets

Situated in 29 States, 2 Canadian Provinces, 5 European Countries—Germany, England, Wales, Scotland and Ireland, including 24 different cities in England, 2 in Ireland, 1 each in Germany, Scotland and Wales.

*The Widest Distribution Northwestern Fruits Have Ever Undergone  
Over 90 per cent of all Apples handled were sold F.O.B. Shipping Station*

The Exchange is preparing comprehensive statements showing average prices realized f.o.b., for each district, variety, grade and size, separately, and will be glad to furnish this information on application. The results **speak for themselves.**

The EXCHANGE is a HOME INSTITUTION—controlled absolutely by fruit growers, as well as being directed throughout by fruit growers whose interests are the COMMON INTERESTS OF THE WHOLE INDUSTRY.

The Sales Records of the EXCHANGE are OPEN TO ALL FRUIT GROWERS at all times. The location of the head offices of the Exchange makes it comparatively easy for every fruit grower to familiarize himself with the details of the EXCHANGE'S operations. The EXCHANGE wishes that every grower in the Northwest could spend a few days in its offices, seeing for himself the unremitting CARE with which his business is handled, the scrupulous INTEGRITY of its accounting, the comprehensive SCOPE of its canvass of the markets, the careful JUDGMENT which is the final test of service.

THE EXCHANGE acts as SALES AGENT FOR ASSOCIATIONS. It believes profoundly in the principal of local association, and wishes it distinctly understood that its policy is one of SUPPORT of this principle; also, that it is in thorough accord and perfect sympathy with **any** and **every** practical movement which gives promise of betterment to the fruit-growing industry.

Ownership of its stock by bona fide fruit growers' associations, and representation on its Advisory Board, are strong features of membership in the EXCHANGE.

The EXCHANGE invites correspondence from all such associations as believe in its principles and wish to inform themselves further regarding its facilities.

## NORTHWESTERN FRUIT EXCHANGE

GENERAL OFFICES: PORTLAND, OREGON

President, REGINALD H. PARSONS (President Hillcrest Orchard Co., 200 acres; Vice President Rogue River Fruit and Produce Association)

Vice President, M. HORAN (President North Central Washington Development League)

Vice President, W. N. IRISH (President Yakima County Horticultural Union)

Secretary, C. R. DORLAND

Treasurer and General Manager, W. F. GWIN (Secretary Kenmar Orchard Company)

IF YOU WANT TO  
MARKET YOUR  
**FRUIT**

RIGHT

ALWAYS SHIP TO

**W. B. Glafke Co.**

WHOLESALE FRUITS  
AND PRODUCE

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**  
GENERAL COMMISSION MERCHANTS

128 FRONT STREET

PHONES: MAIN 2348  
A 2348

PORTLAND, OREGON

**Levy & Spiegl**

WHOLESALE  
FRUITS & PRODUCE  
*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS

Top Prices and Prompt Returns  
PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*  
Livingston, Bozeman, Billings  
Montana  
Pocatello, Idaho  
Salt Lake City, Utah

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS  
*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

WHOLESALE  
FRUITS AND  
PRODUCE

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of  
**YAKIMA VALLEY FRUITS  
AND PRODUCE**

**Specialties:** Apples, Peaches,  
Pears and Cantaloupes

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER  
**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

**Look Good, Taste Better, Sell Best**

*Grade and Pack Guaranteed*

**Apple Growers' Union**  
Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

WHOLESALE FRUITS

121-123 FRONT AND  
200 WASHINGTON ST.  
PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**



# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we sell apples. We make a specialty of handling APPLES, PEARS AND PRUNES on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK

LIVERPOOL

NEW YORK

BOSTON

GLASGOW

## SIMONS, SHUTTLEWORTH & CO.

LIVERPOOL and MANCHESTER

SIMONS, JACOBS & CO.  
GLASGOWJ. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARISGARCIA, JACOBS & CO.  
LONDON

## European Receivers of American Fruits

For Market Information Address:

Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webbing  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine

OUR SPECIALTIES ARE APPLES AND PEARS

## Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

PEACHES  
APPLES AND  
PEARS

Solicit Your Consignments

Reliable Market Reports Prompt Cash Returns

## Ryan & Newton Company

Wholesale Fruits &amp; Produce

Spokane, Washington

We have modern cold stor-  
age facilities essential for the  
handling of your products

Reliable Market Reports

PROMPT CASH RETURNS

## LINDSAY & CO. LTD. Wholesale Fruits

HELENA, MONTANA

Established in Helena Quarter of a Century

Branch houses: Great Falls, Mis-  
soula and Billings, Montana



Best Service and Protection is Secured by Dealing  
with Members of the

## NATIONAL LEAGUE OF COMMISSION MERCHANTS OF THE U. S. A.

AN ORGANIZATION OF RELIABLE AND RESPONSIBLE RECEIVERS IN TWENTY-EIGHT MARKETS  
FOR FREE DIRECTORY OF MEMBERS, WRITE R. E. HANLEY, PUB. MGR., BUFFALO, NEW YORK

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

## W. DENNIS & SONS LIMITED

COVENT GARDEN MARKET  
LONDON

and

CUMBERLAND STREET  
LIVERPOOL

### THE BEST EVER—AND ONLY \$1.00 A YEAR

If you are interested in Irrigation, Drainage, Conservation, Farm and Land Development, or Orchard Culture, you can't afford to be without the

## National Land and Irrigation Journal

The leading magazine of its kind in the world. Handsome four-colored fruit or land picture (just the thing to frame) on the front cover every month. It is also a *Bonanza For Advertisers* because it goes to every state in the Union and into nine foreign countries. Send \$1.00 today to the NATIONAL LAND AND IRRIGATION JOURNAL, 126 Market Street, CHICAGO, ILLINOIS

# Spitzenbergs & Newtowns

*From the*

Hood River Valley,  
Oregon

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

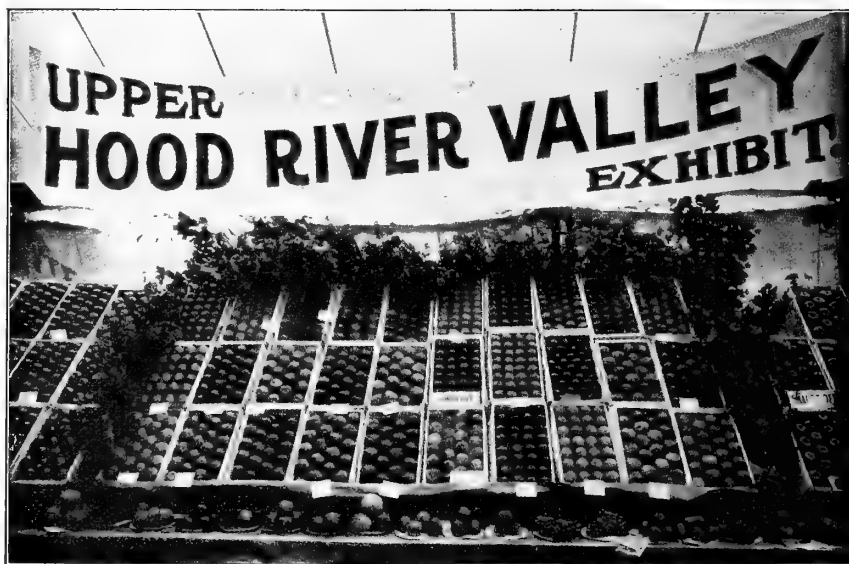
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

### Can You Beat It?

We have got land improved and unimproved that is growing such fruit that can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

**W. J. Baker & Company** Hood River Oregon

The oldest real estate firm in Hood River. Best apple land our specialty

# EVERY SHIPPER

Should aim to retain his identity and build up his business year by year, by shipping exactly what he quotes, and by confining his business relations to reliable dealers.

No shipper can safely rely entirely upon his individual knowledge of his distant customers' "business methods"—it is necessary to know how such customers **have treated other shippers**. The Produce Reporter's Credit Book ("Blue Book") and the Weekly Credit Sheets, and Special Reports keep Members fully posted up to the minute.

Again, no shipper is so well equipped that he can get as good results when shipments are "refused," or complaints made, as he can through the Adjusting Department of the Produce Reporter.

Finally, **Members of this organization do not lose their identity**—do not turn their marketing over to others, perhaps a thousand miles away—but **do their own business**—the doors of opportunity are left open for the expansion and permanent development of their business through their own enterprise and ability.

No matter how reliable the party who wishes to do your business for you (and there are many—though perhaps more who are not), **carefully consider the future—what is there in their "System" FOR YOU?**

Send for pamphlet, "**Four Ways to Market Your Crop.**" Tell us, how many cars, what, and when (approximately) you will be ready to ship.

## Produce Reporter Company

34 SO. CLARK STREET  
CHICAGO

Reference:  
First National Bank of Chicago

Telephones  
Randolph 3412  
" 3413

## Gibson Fruit Company

(Not Inc.)

WHOLESALE COMMISSION  
SHIPPERS' MARKETING AGENTS  
FRUIT AND PRODUCE

Our own Cold Storage Plant on premises  
Capacity 200 Cars  
Codes: Modern Economy 131 South Water Street  
Revised Economy CHICAGO  
Revised Citrus

## Where will the Apples Go



Within ten years—even five years—the yield of apples in the great Northwest will have increased greatly over the present output. Some say 100 per cent—some say more.

Will the consumptive demand show a sufficient increase to take care of the surplus?

If not, what will become of the apples?

Oh, yes, this is theory, but just wait and see if it isn't a matter worthy of serious consideration.

We don't pretend to offer any suggestions beyond the strenuous efforts we have been making to expand the trade in box apples to the maximum. This season we have handled successfully over 1,200 cars, which have been shot to the four points of the compass. That is selling some apples, when you come to think it over—and we want to emphasize the fact that we have put all this vast array of fruit in line for "consumptive channels" with the least possible delay and expense and with quite general satisfaction to growers and buyers as well.

But what of next season, and the next?

We're thinking and planning. It is a matter of serious concern to us, this **SUCCESSFUL** marketing of Western Box Apples, as well as other fruits.

Those interested in getting the most for the present and the best for the future out of their ranches and orchards should not delay writing us about marketing their output the coming season, as well as hereafter.

## Gibson Fruit Company

# 320 Acre Planted Apple Orchard

## FROM ONE TO FOUR YEAR OLD, (STANDARD VARIETIES)

### At \$400 to \$500 Per Acre

Can be bought in five, ten or any size tract. Located in the Upper Hood River Valley. Have small or large tracts of improved and unimproved property in the lower and upper valley. Have also ten acres of bearing orchard for sale, located in center of Hood River Lower Valley.

*For Full Information Address*

G. D. WOODWORTH

HOOD RIVER, OREGON

# ARCADIA IRRIGATED ORCHARDS

THE CENTER OF THE RICH WASHINGTON FRUIT BELT

Arcadia is located twenty-two miles from Spokane, Washington. It's a true fruit district—with every conceivable advantage for making money in the fruit business.

Rich soil, gravity irrigation system, excellent railroad facilities, ideal climate.

**Our Plan**—We plant, cultivate, irrigate and care for your orchard for four years; we pay your taxes for five years. You can remain where you are while we bring your orchard into bearing.

Arcadia is the largest irrigation project in the West. Prices advance January 1st, 1911, so it will pay you to investigate Arcadia now. Ask for literature.

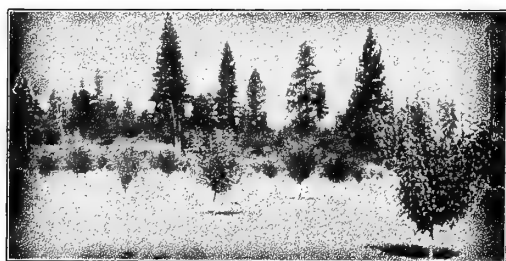
## ARCADIA ORCHARDS COMPANY

HYDE BLOCK

SPOKANE, WASHINGTON

"THE LAND WHERE THE RAIN AND SUNSHINE MEET"

## LYLE, WASHINGTON



A YOUNG ORCHARD NEAR LYLE

THE FIRST PRIZE for the best district display of non-irrigated apples was awarded the LYLE exhibit at the SPOKANE NATIONAL APPLE SHOW, 1910. This speaks for itself.

*FOR BOOKLET AND FURTHER INFORMATION ADDRESS*

## LYLE COMMERCIAL CLUB

LYLE, WASHINGTON

# \$1000 PER ACRE NET \$1000



MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley, and is properly a part of it, so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

SECRETARY MOSIER VALLEY COMMERCIAL CLUB

## MOSIER, OREGON

# The Bond of Confidence

Reflects Upon Every Sale of Irrigated Land at

# OPPORTUNITY

## IN THE SPOKANE VALLEY, WASHINGTON



A PRODUCING ORCHARD AT OPPORTUNITY, WASHINGTON

**OPPORTUNITY** is three miles from Spokane, and offers you the greatest opportunity of your lifetime. Here you can own an orchard in the best and nearest fruit district to Spokane and become independently wealthy in a short time.

Now, we want to prove this to you. We want to put you in touch with people who are now making money at **OPPORTUNITY**, and they will tell you all about this wonderful fruit district. We have letters from them printed in our booklet.

Now, **LISTEN!** **OPPORTUNITY** is a high class fruit district, with electric lights, telephone service, splendid irrigation system, railroad facilities of the best, and all other conveniences that you could desire.

A great deal of money has been expended at **OPPORTUNITY** to make it the most ideal orchard district in the Northwest, and that's why it is such a great success.

GET THE BOOKLET TODAY

## Modern Irrigation and Land Company

P. A. SUMMERLAND, General Sales Agent

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet on Opportunity.

Name .....

Address .....



# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water **TRANSPORTATION**, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this **world famous** apple section of the **Cascade Highlands**.

Other places of the Northwest are also profitable for orchards, but in **these** highlands is the place to live and enthuse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great **opportunities** for **investment**.

## Development League

WHITE SALMON, WASHINGTON

## Irrigated Orchard Tracts **Rogue River Valley**



ROGUELANDS IRRIGATED ORCHARD TRACTS

**OREGON ORCHARDS ARE THE MOST FAMOUS  
IN THE WORLD**

**ROGUE RIVER VALLEY IS THE BEST ORCHARD  
DISTRICT IN OREGON**

**SOLD ON SMALL MONTHLY  
OR ANNUAL PAYMENT PLAN**

The Rogue River Valley has made the apple king. It has won the national prizes at the greatest shows ever held in America. It has received the highest prices ever paid for fruit in the New York and London markets. It has been declared by government experts to be the most perfect fruit belt in the world, and has proven beyond the question of a doubt that it will be the most important fruit section in the entire country. The development of orchard tracts is very profitable. You can make \$1,000 per annum on a five-acre tract while your orchard

is coming into bearing. You can clear \$500 per acre when your orchard is developed. We will sell you a five-acre irrigated orchard tract in the very heart of this wonderful orchard country, with splendid railroad facilities, near the prosperous city of Medford, planted to standard varieties of apples or pears, at \$350 per acre; \$350 cash, balance covering a period of four years. Orchards cared for during a period of five years or turned over at once to the purchaser.

Let us tell you all about the glorious country of Southern Oregon and the wonderful orchards that have made this valley famous. Write for our literature. Our references: Bradstreets and R. G. Dun.

## ROGUELANDS, INC.

FRED N. CUMMINGS, MANAGER

MEDFORD, OREGON

# OKANOGAN IRRIGATION AND IMPROVEMENT CO.

*Capital Stock, \$500,000*

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of water shed on mountain streams furnish an abundant supply of water.

Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

No Better Fruit Land  
in the  
State of Washington

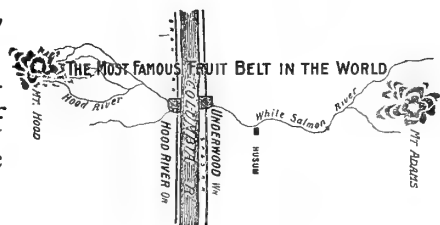
A small block of stock for sale at \$100 per share, par value \$100. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

# UNDERWOOD

*The Gateway to the Famous White Salmon Valley*

If you want a strictly first-class location for growing high-grade fruit, close to the river and railroad, within sight of the town of Hood River, with the best of everything in the way of shipping and social advantages, call on or write

W. F. CASH, UNDERWOOD, WASHINGTON



## G. Y. EDWARDS & CO.

HOOD RIVER, OREGON

*Our Specialties:*

Fruit Lands, Orchards and Raw Lands

Get our literature and list of orchards

WRITE US FOR PARTICULARS



## ASHLAND DISTRICT *of the* ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent free on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.



## Rogue River Valley Southern Oregon

This 80-acre tract in the best red soil district, within 3 miles of a railroad station, adjoining larger tracts for subdivision, on main county road, with about 100 bearing trees of family orchard. About 40 acres cleared, 20 acres more nearly cleared, three-fourths of which is to come under ditch, at \$100 per acre, if taken at once. Reasonable terms.

A. N. PARSONS, Grants Pass, Oregon

References by permission:

First National Bank; Grants Pass Banking & Trust Co.



APPLES

PLUMS

PEARS

PEACHES

PRUNES

## WHITE SALMON VALLEY THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.

**WHERE APPLES, CHERRIES, PEACHES, PEARS, PRUNES AND STRAWBERRIES GROW TO PERFECTION**

A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.

We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap.

WRITE US FOR DESCRIPTIVE MATTER AND PRICES

**ESTES REALTY & INVESTMENT CO.**

White Salmon, Washington

BERRIES

CHERRIES

STRAWBERRIES

NUTS

JONATHAN'S NEWTOWNS

SPITZENBERG'S WINESAPS

# "OREGON IS THE PLACE FOR ME"

### PORTLAND COMMERCIAL CLUB Portland, Oregon

Send me specific information about what Oregon has to offer

- |  |                                     |
|--|-------------------------------------|
| <input type="radio"/> Apple Orchard      | <input type="radio"/> Hotels        |
| <input type="radio"/> Pear Orchard       | <input type="radio"/> Resorts       |
| <input type="radio"/> Peach Orchard      | <input type="radio"/> Schools       |
| <input type="radio"/> Prune Orchard      | <input type="radio"/> Railroads     |
| <input type="radio"/> Live Stock Raising | <input type="radio"/> Towns         |
| <input type="radio"/> Poultry Raising    | <input type="radio"/> Mining        |
| <input type="radio"/> Truck Farming      | <input type="radio"/> Manufacturing |
| <input type="radio"/> Walnut Culture     | <input type="radio"/> Water Power   |
| <input type="radio"/> Wheat Growing      | <input type="radio"/> Merchandising |
| <input type="radio"/> Dairying           | <input type="radio"/> Berry Growing |
| <input type="radio"/> Timber             |                                     |

Name .....

Street .....

Town .....

State .....

That's what you'll say when you learn specifically just what opportunities Oregon can offer you in *your own line* of endeavor.

The Portland Commercial Club will lend you all the assistance within its power to make you thoroughly acquainted with the possibilities Oregon offers you in your own line. It will tell you specifically what inducements different sections of the state are offering.

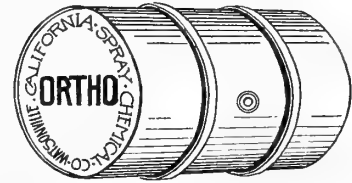
In manufacturing—in dairying—in agriculture—in fruit raising—and all other lines, Oregon offers splendid opportunity for great and successful achievement.

Take out your lead pencil or pen—look down the list of industries, and in the little circle opposite the business that interests you most, make a mark, clip out the list and mail it in. In return you will receive valuable and specific information regarding those sections of Oregon peculiarly adapted to your special line. Write a personal letter. Ask questions that come into your mind. They will all be answered fully and comprehensively. Check the list now while you have it in mind.

**Portland Commercial Club  
Portland, Oregon**



**\$250.00**  
**REWARD, IN GOLD COIN**



The above reward is offered for competent proof that Ortho Lime-Sulphur Solution is even equaled or matched by the average output of any other lime-sulphur plant in the United States or Canada in the following points to-wit:

- First: The container;
- Second: The average strength;
- Third: The uniformity.

Ortho Lime-Sulphur Solution is sold in 55-gallon galvanized steel drums; tests always approximately 36 degrees Beaume, about 15 to 20 per cent stronger than any other average solution. The best is never too good. The first cost is no greater than that of the weakly made. The "Ortho Way" is the best. Special prices for the month of March.

**California Spray-Chemical Co.**

WAREHOUSES IN PORTLAND AND SEATTLE

WATSONVILLE, CALIFORNIA

## HOW YOU CAN SECURE AN ORCHARD THAT WILL PAY FOR ITSELF

These orchards are located in the deep volcanic ash fruit soil of the great Columbia River Basin, less than 100 miles from Portland, Oregon, near Mount Hood and the famous Hood River Valley, with railroad depot on the property.

If you are interested, and have a little money, write, today, for full information in regard to this opportunity, the like of which you will not have again soon, and for "How I Can Secure an Orchard That Will Pay for Itself."

**DUFUR DEVELOPMENT COMPANY**

91 Third Street

PORTLAND, OREGON

### *Choice Fruit Land Our Specialty*

We have  
 fine improved and unimproved fruit land  
 on easy payment plan—we can  
 supply your wants

**R. FIELD & CO.**

White Salmon, Washington

### *The* **PARIS FAIR**

Hood River's largest and best store

**DRY GOODS**  
**SHOES, CLOTHING**

We are offering some extra  
 specials in our Clothing De-  
 partment. Ask to see them.

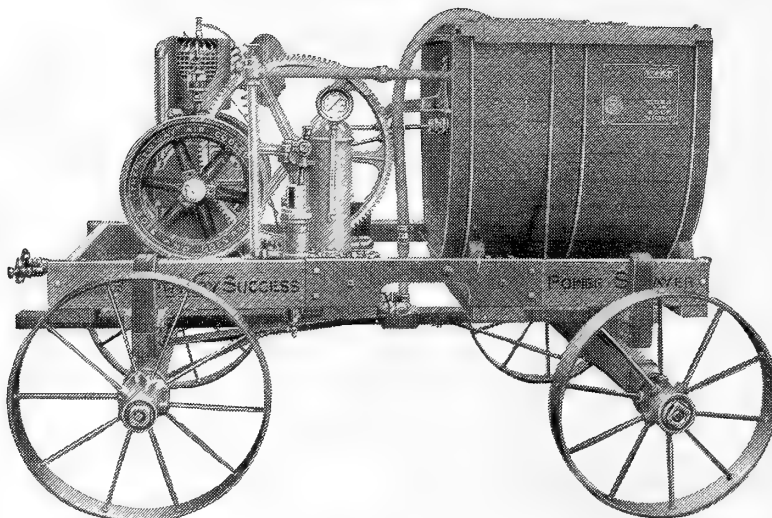
Try a pair of American Lady  
 \$3 and \$3.50 Shoes, or American  
 Gentleman \$3.50 and \$4 Shoes



# ***THE "New-Way"***



the  
light  
weight  
outfit



with the  
high  
pressure  
guarantee

**Twin  
Cylinder**

## **"SUCCESS"**

IS JUST WHAT ITS NAME INDICATES

**Light Weight**

The first high pressure, light weight outfit that has proven practical for orchards of any size. Speically adapted to hilly or soft ground.

**200 Pounds  
Pressure**

Absolutely guaranteed to keep up 200 pounds pressure indefinitely. No strain on outfit, pump built to give it. 200 pounds pressure is absolutely necessary to produce the highest grade and best quality of fruit.

**Twin Cylinder  
Pump**

Twin cylinders cast separately. Constant, steady high pressure. Outside packed pistons. Packing tightened by hand instantly, or replaced in five minutes.

**Engine**

The "New-Way" air cooled. The high grade quality farm engine. Some outfits furnish the cheapest engines that can be purchased. A cheap engine spoils any sprayer.

**Delivery**

We can ship sprayer from Lansing, Mich., Portland, Ore., or Spokane, Wash., the same day order is received as long as our stock lasts. You should have your sprayer **RIGHT NOW**. Last year we were all sold out before the season commenced. **DON'T DELAY TOO LONG.**

**Catalog**

Send postal for sprayer catalog right now. You can't afford to wait



35 ASH  
STREET

MENTION "BETTER FRUIT" AND ADDRESS

***THE "New-Way" MOTOR COMPANY***  
**LANSING, MICHIGAN, U.S.A.**

35 ASH  
STREET

OR **JOHN DEERE PLOW CO.** PORTLAND  
SPOKANE



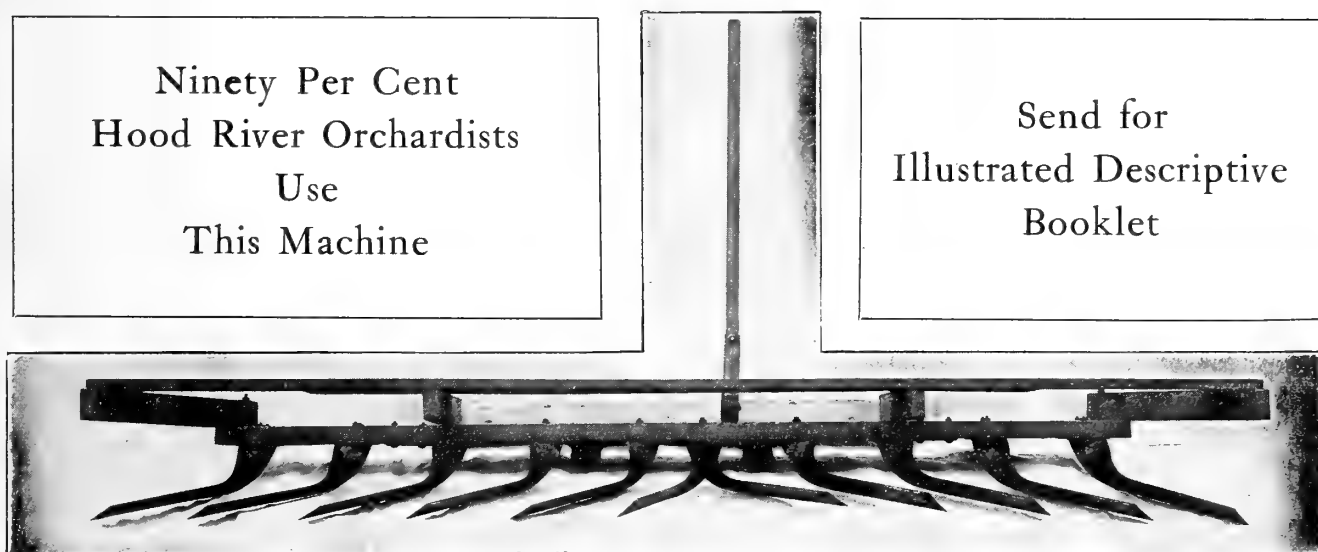


# KIMBALL CULTIVATOR

*Great Weeds and Ferns Exterminator*

Ninety Per Cent  
Hood River Orchardists  
Use  
This Machine

Send for  
Illustrated Descriptive  
Booklet



Hood River, Oregon, February 26, 1910

Mr. W. A. Johnston,  
The Dalles, Oregon

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard, *Editor "Better Fruit"*

## W.A. JOHNSTON, Manufacturer

Office and Factory, 811 East Second Street, The Dalles, Oregon

Long Distance Phone, Main 3671

# Ogburn's Fruit Gathering Vessels

## THE LATEST INVENTION



**OGBURN'S FRUIT-GATHERING VESSEL**  
*Prevents Bruising Fruit, Saves Time & Money. See That Your Hardware Dealer Secures Agency for Next Season.*

EXHIBIT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON  
 NOVEMBER 14 TO 19, 1910, WHERE IT TOOK  
 FIRST PRIZE AND GOLD MEDAL

Saves money by preventing bruising fruit in handling from tree to box. Saves time by leaving both hands free to gather with, and being quick to operate. Money saved is money made.

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. The canvas bottom slides from underneath the paper and delivers the fruit on your packing table without the slightest injury.

This vessel is an oblong metal pail larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit at all.

The vessel holds one-half bushel or half box of apples, and in emptying the second time the canvas bottom eases the fruit in the vessel on that in the box without bruising or scratching, which is practically impossible with the wood or metal bottom pail.

## A Number of these Vessels Given Free

Every reader of "Better Fruit" should write at once and advise number of vessels he can use in 1911. This information is solicited to secure estimate of how many vessels to manufacture, so your orders can be filled promptly. All fruit growers writing not later than April 1, 1911, will receive special order blank with terms upon which a number of these vessels will be given free. Don't fail to write now.

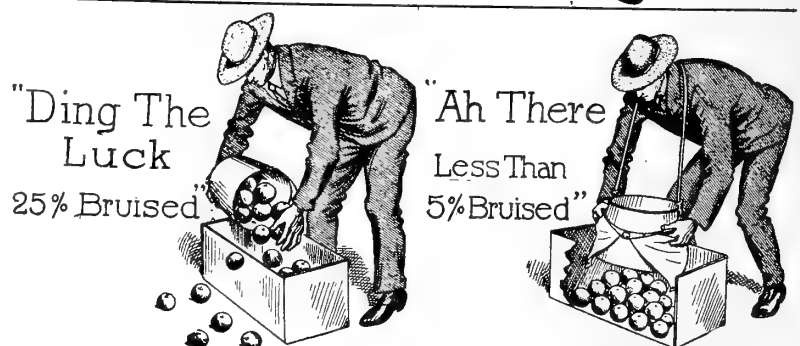
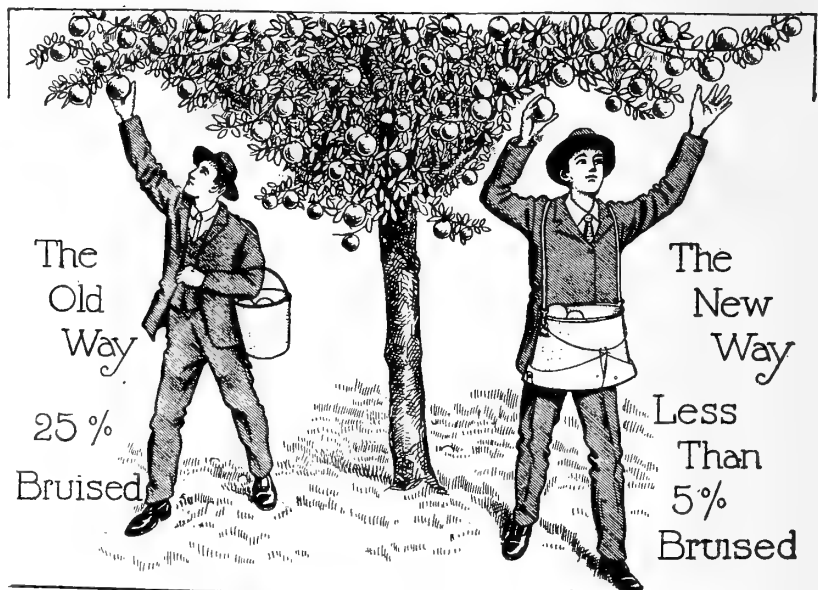
Special terms granted to dealers and agents in their respective trade districts. Secure your territory for 1911 now.

ALL GOODS SHIPPED DIRECT FROM FACTORY

Manufactured by  
**WHEELING CORRUGATING CO.**  
 Wheeling, West Virginia  
 For J. H. OGBURN, Patentee

For territory and terms, address all applications to

**J. H. OGBURN**  
 WENATCHEE, WASHINGTON



ILLUSTRATING OPERATION, OLD AND NEW WAY



Four Year Old Cherry Trees, Not Irrigated

*We Know* and the only way for *You to Know* is for us or someone else to tell you *that* we grow a greater variety of fruit, and of better quality, at

# The Dalles, Oregon

than any other place in the *Great Northwest*, and bear in mind that none of our fruit is irrigated. This is an indication of its superiority, both as to flavor and keeping quality. If you want to raise fruit, you must, in order to succeed, raise the best—this you can do by locating here. The above cut shows a portion of a beautiful 83-acre tract which we have for sale, all in orchard and highly improved, adjoining corporate limits of The Dalles, a city of 7,000 people and rapidly growing. This place is splendidly situated for subdividing.

*Write Us for Particulars*

R. H. WEBER, THE DALLES, OREGON

# Hood River City Investments

100 X 100 On Oak Street, with good buildings, rental income \$110 per month, only \$16,000. Liberal terms.

100 X 200 On Cascade Avenue, consisting of four good lots and frame house. This will double in value within two years. \$7,000. Good terms.

*Combination Orchard and Hay Ranch*—175 acres. 20 acres in orchard from two to fourteen years old, 70 acres in hay produced 100 tons in 1910, balance of land uncleared. Large house and barns, 50 inches irrigating water, all haymaking machinery, near stores and school. \$35,000. Very liberal terms. Big money to be made on this property.

(NOW IS A GOOD TIME TO BUY A HOME  
OR BUSINESS PROPERTY IN HOOD RIVER  
THERE IS SURE TO BE A BIG ADVANCE IN PRICES)

SEE OUR LIST OF ORCHARDS

**J. H. HEILBRONNER & CO.**

THE RELIABLE DEALERS

HEILBRONNER BUILDING

HOOD RIVER, OREGON

## Properties that will be worth 10 to 20% more next Spring

10-acre block of solid orchard, located 2½ miles from town, on main county road. All Newtowns and Spitzenbergs, 5 years old, and in the very best of condition, having had a few apples last year. There is not a better orchard on the West Side—nothing to compare with it at the price of \$12,000. \$5,000 cash, balance 7% interest.

15 acres 6½ miles from Hood River; near railway station, school and church; all set to Newtowns and Spitzenbergs, as follows: 5 acres 7 years old, 3 acres 6, 1½ acres 4 and 4½ acres 3 years old. Trees in A1 condition; picked 1,120 boxes of apples this year. Three acres of strawberries between trees. Old house, good barn. This tract is one of the best buys in the Hood River Valley at the price of \$14,000. \$5,000 cash, balance on or before five years at 7%.

103 acres on edge of Willow Flat District; heavy red shot soil, south and east slope, with good drainage; 20 acres under cultivation; 10 acres set to young Newtowns and Spitzenbergs; 8 acres practically cleared, balance of place fir and oak timber. Small house and barn. The price is way below the market at \$14,000. \$3,500 cash, balance on or before seven years at 7%.

20 acres 7½ miles southeast of Hood River; red shot soil, good drainage, and all under the ditch; 4 acres in Spitzenbergs and Newtowns one year old; 12 acres slashed and burned, balance in fir. Price \$5,000; \$2,000 cash, balance on or before five years at 7%.

FOR INFORMATION REGARDING HOOD RIVER WRITE

**DEVLIN & FIREBAUGH**

THE LEADING DEALERS

Swetland Building, Portland, Oregon

Hotel Oregon Building, Hood River, Oregon

# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## SCIENTIFIC METHOD OF IRRIGATING ORCHARDS

BY SAMUEL FORTIER, CHIEF OF IRRIGATION INVESTIGATION, EXPERIMENTAL STATION, U. S. DEPARTMENT OF AGRICULTURE

CARE and good judgment should be exercised in the selection of an orchard tract. If it turns out well the profits are high, but if it fails the losses are heavy. It involves the setting aside of good land, the use of irrigation water, and somewhat heavy expense in purchasing trees, setting them out and caring for them until they begin to bear.

Assuming that the climate and soil of the district selected are adapted to the kind of trees to be grown, the next important things to consider are good drainage and freedom from early and late frosts. Low-lying lands under a new irrigation system should be regarded with suspicion, even if the sub-soil be quite dry at the time of planting. The results of a few years of heavy and careless irrigation on the higher lands adjacent may render the low lands unfit for orchards. On the other hand, the higher lands are not always well drained naturally. A bank of clay extending across a slope may intercept percolating water and raise it near the surface. Favored locations for orchards in the mountain states are often found in the narrow river valleys at the mouths of canyons. The coarse soil of these deltas, the steep slopes and the daily occurrence of winds, which blow first out of the canyons and then back into them, afford excellent conditions for the production of highly flavored fruits at the minimum risk of being injured by frost.

Proper exposure is another important factor. In the warmer regions of the West and Southwest a northern exposure is sometimes best, but as a rule the orchards of the West require warmth and sunshine, and a southerly exposure is usually most desirable. Natural barriers frequently intercept the sweep of cold, destructive winds, and when these are lacking wind-breaks may be planted to serve the same purpose. Depressions or sheltered coves should be avoided if the cold air has a tendency to collect in them, a free circulation of air being necessary to drive away frost. The low-lying lands seem to be the most subject to cold, stagnant air.

While experience has shown that the orchard trees of nearly all kinds can be successfully grown on soils that differ widely in their mechanical and chemical composition it has also shown that certain types of soils are best adapted to particular kinds of trees. Thus the best peach, almond, apricot and olive orchards of the West are found on the lighter or sandier loams; the best apple, cherry and pear orchards on heavier loams, while

walnut, prune and orange orchards do best on medium grades of soil. The requirements of all, however, are a deep, rich and well drained soil.

Formerly most Western orchards were supplied with water through earthen ditches. These leaky, unsightly channels, by reason of their cheapness, would have been quite generally retained had it not been for the increasing value and scarcity of water. The value of water for irrigation purposes has increased beyond the average of that given by the census report of 1902 over 300 per cent. In many localities there is likewise great

The Lewiston Basin is located where Clearwater River flows into the Snake River in Western Idaho, and varies from 700 to 1,900 feet above sea level. A few years ago water was brought from neighboring creeks and stored in a reservoir. The water required for orchard irrigation is conducted from this reservoir under pressure in two lines of redwood stave pipes over the rolling hills which separate the reservoir from the orchard lands. On these lands contour lines were first established, and each quarter section was afterwards divided into forty-acre tracts by sixty-foot streets. These were further subdivided into eight five-acre tracts, with a twenty-foot alley through the center. Figure 1, showing block 28 of the survey, indicates the general arrangement. The large conduits from the reservoir are connected to smaller lateral pipes laid in the alleys, and these in turn are tapped by three-inch pipes, which furnish water to the five-acre tracts.

The town of Corona, California, is hemmed in on all sides by lemon and orange orchards. The chief water supply for these groves comes from Perris Basin, forty miles distant. The Temescal Water Company owns 3,600 acres of water-bearing lands in this basin, and at favorable points pumping plants have been installed. These plants are operated by motors supplied with current from a central generating station located at Ethenac. The discharge from each pump is measured over a rectangular wier having an automatic register. This device is shown in Figure 2. Small lined channels convey the water from the pumps to the main conduit, shown in cross-section in Figure 3. The concrete lining of this conduit is composed of one part cement to seven parts sand and gravel, having a thickness on the slopes of two and one-half inches and on the bottom of three to four inches. The lining is rendered still more impervious by the addition of a plaster coat one-fourth of an inch in thickness, composed of one part of cement to two parts of sand. The cost was five and one-half cents per square foot, or fifty-five cents per linear foot. The main conduit consists of about thirty miles of lined canal and ten miles of piping thirty inches in diameter. The groves are laid out as a rule in ten-acre tracts, and piping of various kinds conveys the water from the main to the highest point of each tract, from which it is distributed between the rows in furrows.

### Contents

SCIENTIFIC METHOD OF IRRIGATING  
ORCHARDS, 19

SELECTING AND IRRIGATING  
ORCHARDS, 29

BEST METHOD OF APPLYING  
WATER TO CROPS, 32

MOST PROFITABLE USE OF OUR  
WATER SUPPLY, 37

ROOT DISEASES CAUSED BY  
ARMILLARIA MELLA, 41

EDITORIAL, 48

CENTRAL SELLING AGENCY FOR  
NORTHWEST FRUITS, 48

GROWING BLACKBERRIES AND  
RASPBERRIES, 54

HISTORY OF SPRAYING IN  
PAJORA VALLEY, 65

scarcity at certain times. These rapidly changing conditions have induced many water companies to save some of their heavy losses in conveying water supplies by substituting pipes for open ditches in earth, or else by making the ditches water tight by an impervious lining.

The high value and scarcity of the water in natural streams have likewise induced orchardists to install pumping plants to raise water from underground sources. It was estimated that in 1909 20,000 of these plants were in operation in California alone. In other parts of the West reservoirs are being built to supplement the late summer flow of streams which fail to provide enough water for all.

The few typical examples which follow may not only give the reader an idea of how orchards are supplied with water, but also indicate the customary division into tracts to serve this and other purposes.



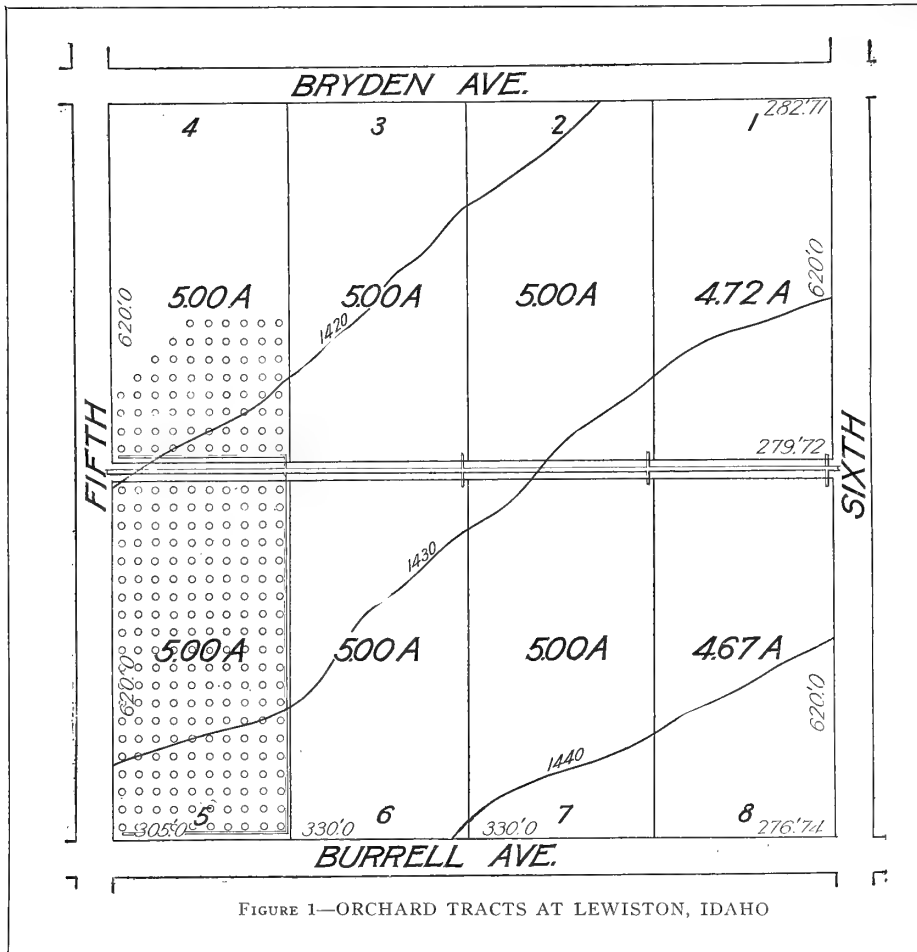


FIGURE 1—ORCHARD TRACTS AT LEWISTON, IDAHO

A large part of the water used by the Riverside Water Company is pumped from the gravelly bed of the Santa Ana River. From thence it is conveyed in a main canal to the orchard lands and distributed to the groves in cement and vitrified clay pipes. The owner of a tract, whether it be ten, twenty, thirty or forty acres in extent, receives his supply at the highest corner through a hydrant box. Each hydrant box not only allows the water to pass from the end of a lateral pipe to the head flume of the tract to be irrigated, but also measures the amount in miner's inches under a four-inch pressure head as it passes through. A section of the hydrant box, showing the adjustable steel slides to regulate the opening, is given in Figure 4.

On the Gage canal system in Riverside, California, the water supply for the tiers of forty-acre tracts is taken from the canal in riveted steel pipes, varying from six to ten inches in diameter. These larger mains are connected with four, five and six-inch lateral pipes of the same material, which convey the water to the highest point of each ten-acre tract. This general arrangement is shown in the sketch, Figure 5.

As a rule fruit trees are planted on land previously cultivated and cropped. One of the best preparatory crops for orchards is alfalfa. This vigorous plant breaks up the soil and sub-soil by its roots, collects and stores valuable plant foods, and when it is turned under at the end of the second or third year leaves

the soil in much better condition for the retention of moisture and the growth of young trees.

In the Bitter Root Valley, Montana, new land is first plowed eight to twelve inches deep, then carefully graded and smoothed and seeded to red clover for one or two seasons. On the west side of this valley pine trees and pine stumps are encountered. These can best be removed by burning. A hole one and one-half inches in diameter is bored through the base of the stump or tree in a slanting direction. It is near the surface of the ground on the windward side and about eighteen inches above the surface on the leeward side. A fire is then built in the hole, using small twigs to start it. As the fire burns the opening is increased and larger limbs are inserted. In two or three days the stump will have burned out, the fire burning down into the roots to a depth of twelve to fourteen inches. The cost of such clearing varies with the character of the land and the density of the growth. From \$10 to \$15 an acre will clear the land of stumps, and it then costs \$5 to \$10 to get the unburnt roots plowed out and the land ready for planting.

In recent years large areas of wooded lands in both the Hood River and Rogue River Valleys of Oregon have been cleared in order to plant apple trees. One of the methods employed in the Hood River district to rid the land of its growth of fir, pine, scrub oak and laurel is similar to that just described.

Another method consists in splitting open the stumps with giant powder and then pulling out the roots with a stump puller. Stump pullers of various kinds are used in California for a like purpose. The most powerful of these consists of a portable engine, windlass and cable similar to an ordinary hoisting plant. A heavy chain is fastened to the tree at the proper height above the ground. To this chain the pulling cable is hooked, and when the power is applied the tree is pulled out by the roots.

In New Mexico and Texas the mesquite is usually grubbed out by Mexicans, but in California, where labor costs more, such shrubs as mesquite, manzanita and chaparral can be more cheaply removed by a stout pair of horses and a logging chain.

An effort should be made to establish a fairly uniform grade from top to bottom of each tract. This is done by cutting off the high points and depositing the earth thus obtained in the depressions. The length of the furrows should not exceed one-eighth of a mile, and in sandy soil they should be shorter. As a rule it is not difficult to grade the surface of an orchard so that small streams of water will readily flow in furrows from top to bottom.

In setting out orchards which are to be irrigated the elevation of the surface of the ground should first be ascertained. This is usually done by making a contour survey by which each tract is divided up into a number of curved strips or belts by level lines. Such contours are shown in Figure 1, the vertical distance between them in this particular case being one foot. With these as a guide the direction of the tree rows can readily be determined. Where the trees are watered in basins or checks flat slopes are not so objectionable, but in furrow irrigation a slope of about two inches to the one hundred feet is necessary to insure an even distribution of water. When streams are to be run in the furrows the slope of the furrows may be increased to eight, ten and even to twelve inches to the 100 feet. On slopes varying from ten to forty feet to the mile the tree rows may, therefore, be located at the proper distance apart down the steepest slope. Under such conditions the trees are most commonly planted in squares. The location of the trees can be best fixed by the use of a surveyor's transit and steel tape. When these are not available a woven wire cable about three-sixteenths of an inch in diameter will answer the purpose. If apple trees are to be set out, and it is desired to have them thirty-two feet apart tags are inserted between the strands of the cable to mark this exact distance. A base line at the proper distance from the fence or one margin of the field is then laid down and long sighting stakes driven at each tag. The corner is then turned and a similar line is laid out. This process is continued until the location of the trees around each of the four sides of the tract has been fixed. The corners can best be turned with a 100-foot tape or link chain.

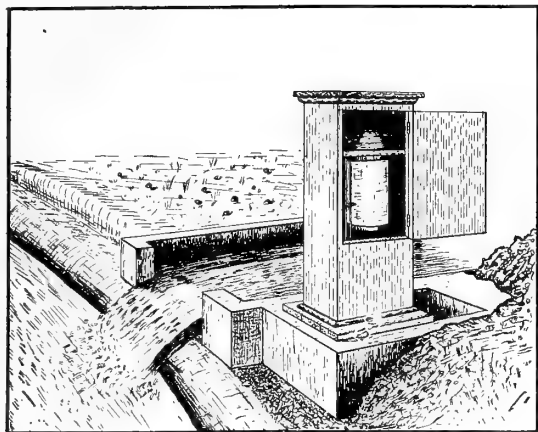


FIGURE 2—WEIR WITH AUTOMATIC REGISTER, USED BY THE TEMESCAL WATER COMPANY

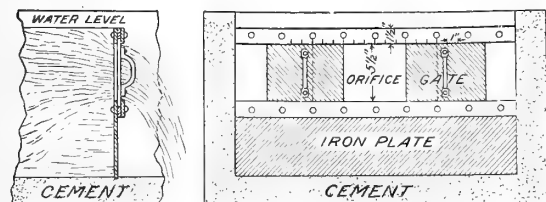


FIGURE 4—SECTION OF HYDRANT BOX, RIVERSIDE WATER COMPANY, SHOWING DEVICE FOR MEASURING MINER'S INCHES

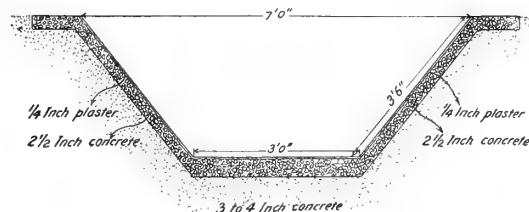


FIGURE 3—CONCRETE-LINED CANAL OF TEMESCAL WATER COMPANY

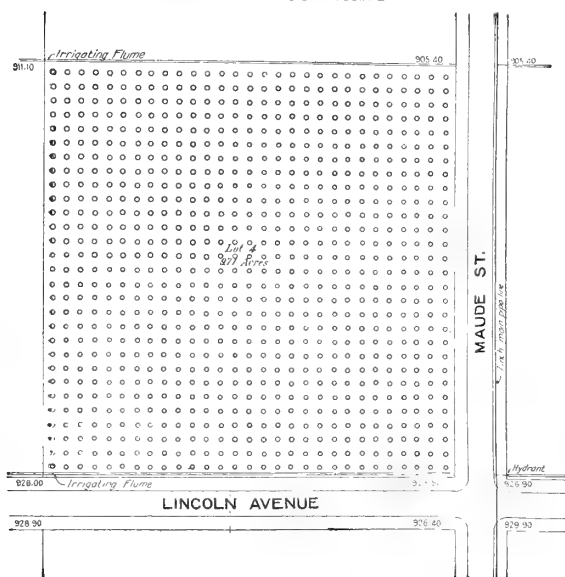


FIGURE 5—ORCHARD TRACT UNDER GAGE CANAL RIVERSIDE, CALIFORNIA

First measure from the end of the base line a distance of thirty feet. Hold the one hundred end of the chain at this point, and the ten-foot link at the corner; take the tape or chain at the fifty-foot mark or link and pull both lines taut. A stake driven at this vertex will establish a point on a line at right angles to the first. When stakes have been set on all four sides the intermediate locations for the trees can readily be ascertained by sighting between corresponding marginal stakes.

Where the slope is steep and difficulties are likely to be encountered in distributing water the equilateral, hexagonal or septuple method of planting, as it is variously termed, should be adopted. The manner of marking the ground for this method is indicated in Figure 6. It will be observed that in this method the ground is divided up into equilateral triangles, with a tree at each vertex. The trees likewise form hexagons, and when one includes the center tree at each hexagon they form groups of sevens. Hence the name equilateral, hexagonal and septuple.

The chief advantage of this mode of planting in irrigated districts is that it provides three, and often four, different directions in which furrows may be run. Having the choice of so many it is not difficult to select one which is best for any particular tract. The ground can likewise be cultivated in more ways, and about one-seventh more trees can be

planted to a given area than is possible in the square method.

In the past the trees of irrigated orchards have been planted too close. This is made clear to even the casual observer who visits the old orange groves of Riverside, California, the deciduous orchards of the Santa Clara Valley, California, or the apple orchards of the Hood River district in Oregon. Under irrigation systems peach trees should be spaced twenty to twenty-two feet, olive, pear, apricot and cherry trees from twenty-two to twenty-eight and thirty feet, orange trees twenty-two to twenty-four feet, apple trees thirty to thirty-six feet and walnut trees from forty-eight to fifty-six feet apart.

On the Pacific Coast the tendency toward wide spacing has induced many growers to insert peach fillers between other slower maturing trees, such as the apple and walnut. A common practice in this direction is shown in Figure 7, which represents the arrangement of trees in a young orchard in Douglas County, Washington. Here the trees are set in squares eighteen feet each way, but in every other row peach trees alternate with the standard apple trees. In the remaining rows Winesap apple trees are used for fillers. As the apple trees grow and begin to crowd the fillers the peach trees are removed. If more space is required the Winesaps can be taken out, leaving the apple trees in squares thirty-six feet apart both ways.

The usual way of irrigating orchards is by means of furrows. These vary in depth, length and distance apart, but this diversity does not tend to create different kinds of furrow irrigation. The division of this subject is rather due to the means employed in distributing the water from the supply ditch to the furrows. In some cases the distribution is effected by making openings in an earthen ditch, in others by inserting wooden or iron spouts in the ditch banks, while in many others flumes having the desired number of openings, or pipes with standpipes, divide the supply among the requisite number of furrows. These designs and methods will be described under their respective headings.

Permanent ditches at the head of orchard tracts should be located by a surveyor. The proper grade depends chiefly on the soil. If the soil is loose and easily eroded a slow velocity is best. On the other hand, the velocity must be sufficiently rapid to prevent the deposition of silt and the growth of water plants. In ordinary soils a grade of two and one-half inches to one hundred feet for a ditch carrying two cubic feet per second is not far out of the way. The amount of water to be carried varies from one-half to two or more cubic feet per second. A ditch having a bottom width of twenty-four inches, a depth of six inches and sloping sides ought to carry one and one-half cubic feet per second on a grade of half an inch to the

rod, or three inches to one hundred feet. Such a ditch may be built by first plowing four furrows and then removing the loose earth either with shovels or a narrow scraper. The loose earth may likewise be thrown up on the sides and top by means of the home-made implement shown in Figure 8. Canvas dams, metal tappoons or other similar devices are inserted in the head ditch to raise the surface of the water opposite that part of the orchard where furrows have been made, and which is about to be watered. The chief difficulty in this mode of furrow irrigation arises in withdrawing water from the ditch and in distributing it equally among a large number of furrows. A skilled irrigator may adjust the size and depth of the ditch bank openings so as to secure a somewhat uniform flow in the furrows, but constant attention is required in order to maintain it. If the water is permitted to flow for a short time unattended the distribution is likely to become unequal. Parts of the ditch bank become soft, and, as the water rushes through, the earth is washed away, permitting larger discharges and lowering the general level of the water in the ditch so that other openings may have no discharge. Some of the orchardists of San Diego, California, insert in niches cut in the bank pieces of old grain sacks or tent cloth. The water flows over these without eroding the earth. Another device is to use a board pointed at the lower end and containing a narrow opening or slot, through which the water passes to the furrow. Shingles are also used to regulate the flow in the furrows. The thin ends of these are stuck into the ground at the heads of furrows.

In recent years short tubes or spouts have been used in many of the head ditches of orchards to divert small quantities of water to furrows. These tubes are usually made of wood, but pipes made of clay, black iron, galvanized iron and tin are occasionally used.

For nurseries, and young trees especially, and also for mature trees, a cheap and serviceable tube may be made from pine lath, such as are used for plastering. The four-foot lengths are cut into two equal parts and four of these pieces are nailed together to form a tube. One of these tubes, when placed with its center two inches below the surface of the water in the head ditch, discharges nearly three-quarters of a miner's inch of water,

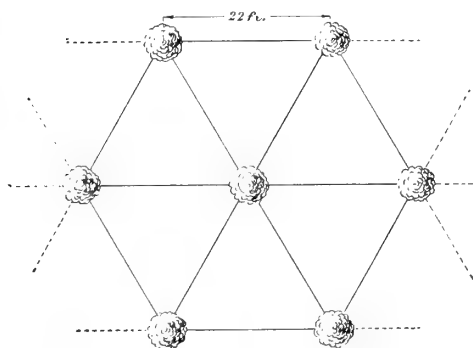


FIGURE 6—HEXAGONAL METHOD OF SETTING OUT ORCHARD TREES

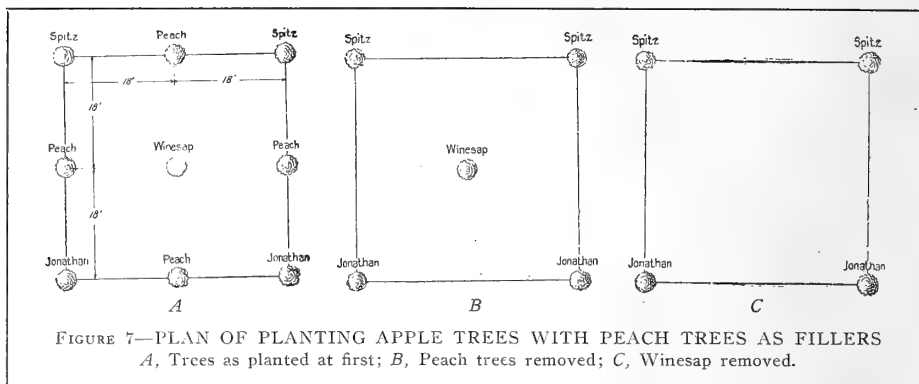


FIGURE 7—PLAN OF PLANTING APPLE TREES WITH PEACH TREES AS FILLERS  
A, Trees as planted at first; B, Peach trees removed; C, Winesap removed.

and if placed four inches below the surface will discharge more than one miner's inch. In Southern Idaho the lumber mills manufacture a special lath for this purpose. It is one-half inch thick, two inches wide and thirty-six inches long. If such tubes, when thoroughly dry, are dipped in hot asphalt they will last a much longer time. In some of the deciduous orchards of California a still larger wooden tube or box is used. Figure 9 represents one of these. It is made of four pieces of three-quarter by three and three-quarter inch redwood boards of the desired length. The flow through this tube is regulated by a cheap gate, consisting of a piece of galvanized iron fastened by means of a leather washer and a wire nail.

The orchardist who lives near a manufacturing town or city can often purchase at a low figure pieces of worn-out and discarded piping, varying from three-quarters to two inches in diameter. Such pipes, when cut into suitable lengths, make a good substitute for wooden spouts. Tin tubes one-half inch in diameter and of the proper length have been used with good success. In compact soils, through which water passes very slowly, furrows must be near together, and under such conditions small tin tubes are to be preferred.

In making use of tubes of various kinds to distribute water to furrows it is necessary to maintain a constant head in the supply ditch. This is done by inserting checks at regular distances. These distances vary with the grade of the ditch, but 150 feet is not far from being an average spacing. In temporary ditches the canvas dam is perhaps the best check, but in permanent ditches it pays to use wood or concrete. An effective wooden check is shown in Figure 10. In this the opening is controlled by a flashboard, which may be adjusted so as to hold the water at any desired height and at the same time permit the surplus to flow over the top to feed the next lower set of furrows.

Formerly head flumes for orchards were built of wood, but the steady increase in the price of lumber and the decrease in the price of Portland cement have induced many fruit growers to use cement instead. When built of wood the length of the sections varies from twelve to twenty feet, sixteen feet being the most common. The bottom width runs from six to twelve inches, while the depth is usually one to two inches less.

Redwood lumber one and one-quarter inches thick is perhaps the best for the bottom and sides, and joists of two by four-inch pine or fir are commonly used for yokes, which are spaced four feet centers. Midway between the yokes auger holes are bored, and the flow through these openings is controlled in the manner shown in Figures 11 and 12. A two-inch fall for each hundred feet may be regarded as a suitable grade for head flumes, but it often happens that the slope of the land is much greater than this, in which case low checks are placed in the bottom of the flume at each opening, as shown in Figure 12.

A head flume composed of cement, sand and gravel costs, as a rule, about twice as much as a wooden flume of the same capacity, but the early decay of wood, especially if it comes in contact with earth, makes the cement flume cheaper in the end. By means of a specially designed machine, which is patented, cement mortar, composed of one part cement to about six parts of coarse sand, is fed into a hopper and forced by lever pressure into a set of guide plates of the form of the flume. Such flumes are made in place in one continuous line across the upper margin of the orchard tract. After the flume is built, and before the mortar becomes hard, small tubes from three-quarters to one and one-half inches in diameter, the size depending somewhat on the size of the flume, are inserted in the side next the orchard. The flow through these tubes is regulated by zinc slides, shown in Figure 12. Flumes of this kind are made in five sizes, the smallest being six inches on the bottom in the clear and the largest fourteen inches.

At a slightly greater cost a stronger flume can be built by the use of molds. The increased strength is derived from a change in the mixture. In the machine-made flume the mixture of one part cement to five or six parts of sand is lacking in strength, for the reason that there is not enough cement to fill all the open spaces in the sand. In using molds medium sized gravel can be added to the sand, and the mixture resembles that of the common rich concrete. Such flumes can be built of almost any size from a bottom width of ten inches to one of forty inches, and from a depth of eight inches to one of twenty-four inches, but when the section is increased beyond about 240 square inches it pays better to slope the sides outward and adopt the



FIGURE 8—THE USE OF THE "A" SCRAPER IN BUILDING HEAD DITCHES

form of the cement lined ditch. At the present time the cost of rich concrete in place would be about \$9 per cubic yard for the larger flumes and \$10.50 for the smaller sizes. The quantity of concrete required per linear foot of flume depends on its size and the thickness of its sides and bottom. The dimensions given in Figure 13 are for light rather than for heavy flumes, and are designed for localities where there is little frost.

For large head flumes and laterals many fruit growers first carefully prepare an earthen ditch which has carried water for at least one season and afterwards line the inner surface with cement concrete. Figure 14 shows a section of such a ditch.

Several years ago 3,200 linear feet of head ditches were lined for twenty-six and one-half cents per foot; they were fourteen inches on the bottom, with eighteen-inch sides and a two-inch lining. The cement cost \$2.85 per barrel, gravel seventy-five cents per yard and labor \$1.75 to \$2.50 per day.

Head flumes, being placed on the surface of the ground, interfere with the free passage of teams in cultivating, irrigating and harvesting the crop. Dead leaves from shade and fruit trees also clog the small openings in the flumes. These and other objections to flumes have induced many fruit growers of Southern California to convey the water in underground

pipes and distribute it through standpipes placed at the heads of the rows of trees. Both cement and clay pipes are used for this purpose.

The former are usually molded in two-foot lengths, with beveled lap joints, and consist of a one to three or one to four mixture of cement and fine gravel and sand. The most common sizes are six, eight, ten and twelve inches in diameter, having a thickness of shell in the twelve-inch pipe of one and one-half inches, which is reduced to a trifle more than one inch in the six-inch pipe. Piping of this kind, when well made and carefully laid, will withstand a head of ten to sixteen feet. The clay pipe is similar to that used in cities for sewers and, having stronger joints, withstands a greater pressure, but costs more. A line of pipe is laid about two feet below the surface from the feed main and measuring box across the top of the orchard, and as each row of trees is passed a standpipe is inserted. The general plan is shown in outline in Figure 15. Various devices are employed to convey the water from the pipe to the surface of the ground at the head of each tree row and divide it up evenly among four to six furrows. One of the most common consists of a series of standpipes, the top of each set rising to the same elevation. At each change of elevation special standpipes are used, and in these are inserted gates provided with overflows. The manner of distributing the water from a standpipe to the furrows of any one row is shown in Figure 16.

Occasionally a high pressure pipe is substituted for cement and clay. This is tapped at the head and in line with each row of trees, and a small galvanized iron pipe is inserted. These standpipes are capped by an ordinary valve, which regulates the flow to each row of trees. This method is shown in operation in Figure 17, where a young orchard is being irrigated from three-quarter-inch galvanized iron standpipes connected with a three-inch wooden pipe.

The length of the furrow is often governed by the size of the orchard. The rows of citrus trees seldom exceed forty rods in length, but the apple orchards of the Northwest are larger as a rule. Even in large tracts it is doubtful if it ever pays to run water in furrows more than about 600 feet. Where the soil is open and water sinks readily through it short furrows should be used, otherwise much water is lost in deep percolation on the upper part of the tract. Professor H. Culbertson, of San Diego County, California, after a careful investigation of this subject, has reached the conclusion that on sandy or gravelly soil having a steep slope the proper length of furrows is 200 feet, while on heavier soils and flatter slopes the length may be increased to 600 feet.

The grade of furrows varies quite widely. In flat valleys it is often not possible to obtain a fall greater than one inch to 100 feet, while on steep slopes the fall may reach twenty inches per 100 feet. On ordinary soils a grade of three to four inches is to be preferred, and where the fall exceeds eight to ten inches to 100 feet the trees should be set out in such a way as to decrease the slope of the furrows.

The number of furrows in orchards depends on the age of the trees, the space between the rows, the depth of furrow and the character of the soil. Nursery stock is irrigated by one or two furrows and young trees by two to four. A common spacing for shallow furrows is two and one-half feet, while deeper furrows are made three to four feet apart. The general trend of orchard practice is toward deep rather than shallow furrows, a depth of eight inches being frequently used.

The furrowing implement most commonly used by the orchardists of Orange County, California, consists of a sulky frame, to which are attached two or three double mold-board plows. Those who prefer a small number of deep furrows use a twelve to fourteen-inch corn lister. In Figure 18 is shown a furrower made by attaching an arm to a cultivator and then fastening two shovels to the arm. In the view the space between the furrows is four and one-half feet and

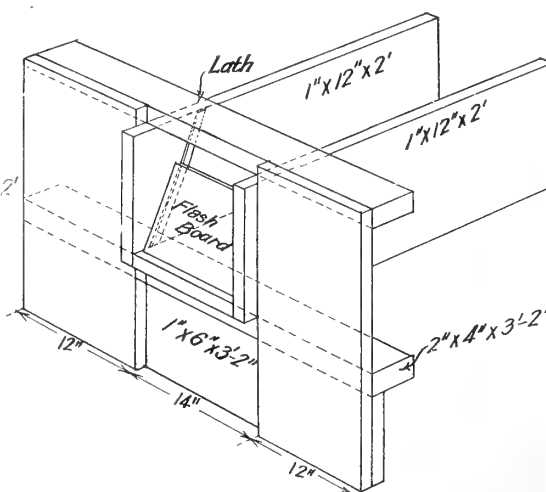


FIGURE 10—WOODEN CHECK IN HEAD DITCH

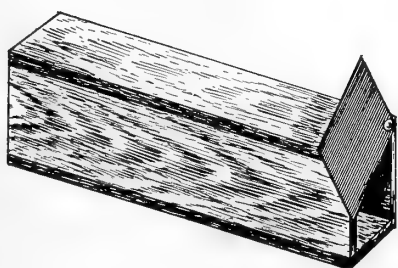


FIGURE 9—WOODEN BOX PLACED IN BANK OF HEAD DITCH

the depth is regulated by the lever arm of the cultivator.

In the Payette Valley, Idaho, 200 or more miner's inches are turned into the head ditch and divided up by means of wooden spouts into a like number of furrows. On steep ground much smaller streams are used. The length of the furrow varies from 300 feet on steep slopes to 600 feet and more on flat slopes. The time required to moisten the soil depends on the length of the furrow and the nature of the soil. In this locality it varies from three to thirty-six hours.

J. H. Foreman owns twenty acres of bearing orchard under the Sunnyside canal in the Yakima Valley, Washington, and waters it four times in each season with fourteen miner's inches (0.35 cubic feet per second). He makes three furrows between the rows, which are forty rods long. The total supply is applied to one-half the orchard (ten acres) and kept on forty-eight hours.

On the clayey loams of the apple orchards on the east bench of the Bitter Root River, Montana, Professor R. W. Fisher has found, as a result of experi-

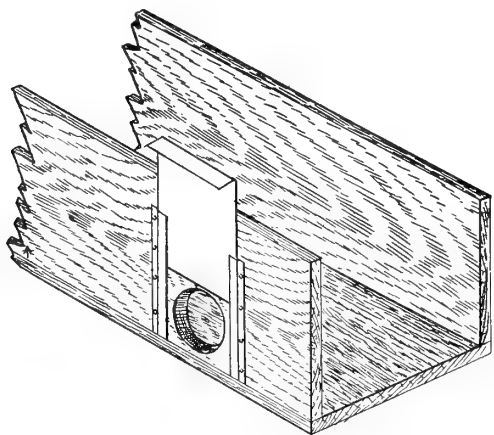


FIGURE 11—SECTION OF WOODEN HEAD FLUME SHOWING OPENING AND GATE

menting, that it requires from twelve to eighteen hours to moisten the soil in furrow irrigation four feet deep and three feet sideways.

In 1908 Mr. Struck, of Hood River, Oregon, irrigated three acres of apple trees in furrows 350 feet long, spaced three feet apart. About a miner's inch of water was turned into each alternate furrow from a wooden head flume, Figure 11, and kept on for about forty-eight hours. After the soil had become sufficiently dry it was cultivated, and in eight or ten days thereafter water was turned into the alternate rows, which were left dry during the first irrigation.

For the most part the furrows are made parallel to the rows of trees. An arrangement of this kind is satisfactory in young orchards, but as the trees reach maturity their branches occupy more of the open space between the rows and prevent the making of furrows near the trees. This is shown in Figure 19, where a space of six to twelve feet square, according to the size of the trees, is not furrowed. This space usually becomes so dry that it is worthless as a feeding ground for roots. In order to moisten these dry spots a larger stream is often

carried in the two furrows next to each row of trees and the surplus is led across in short furrows in the manner shown in Figure 20. Instead of continuing straight and cross furrows, as is done in Figure 20, use is frequently made of diagonal furrows, Figure 21, to moisten the dry space between the trees. This last method is best adapted to grades of five inches to the one hundred feet or more.

A method and the cost of one irrigation is described as follows:

The implement used to make furrows consists of three shovels attached to a beam which is mounted on a pair of low wheels. The driver sits on a riding seat, and by operating a lever can regulate the depth of the furrows. A man and two horses will furrow out ten acres in a day. For a distance of 150 feet from the top of the orchard the furrows are straight. They are then zigzagged to within sixty or seventy feet of the bottom, where the last three rows of trees are irrigated by basins which catch the surplus. In the case described the depth of furrow was six inches, length 800 feet and distance apart three feet. A head of fifty miner's inches (one cubic foot per second) was used on ten acres. The streams when first turned into the furrows averaged about two miner's inches, but as the water approached the lower end they were reduced to one miner's inch or less, and this flow was run in each furrow for twelve to twenty-four hours.

The items of cost for ten acres were: Making furrows and basins, \$6.50; irrigating, \$3; fifty inches of water twenty-four hours at forty cents an hour, \$9.60; rent of water stock, \$12; a total of \$31.10.

Orchards are sometimes irrigated by first forming ridges midway between the rows in two directions at right angles to each other. This divides up the tract into a large number of squares with a tree in the center of each, as may be observed in Figure 22.

When the ground is hard or covered with weeds a disk plow is first run between the rows and then the loosened earth is formed into a ridge by a ridger. If the soil is light, sandy and free from weeds the disking is not necessary. Ridgers are made in various ways of both wood and steel, or some combination of both. A common kind is shown in Figure 23. It consists of two deep runners fourteen to eighteen inches high, two inches thick and six to eight feet long. These runners are shod with steel, which extends part way up the

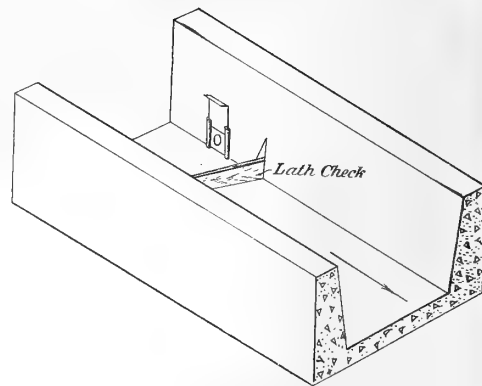


FIGURE 12—THE USE OF LOW CHECK IN HEAD FLUME

inner side. They are four to five feet apart at the front end and tapered to sixteen to twenty-four inches at the rear. The runners are held in position by cross pieces on top, a floor and straps of steel in the manner shown. The height of the ridges varies with the depth of water applied, which is from four to nine inches. The ridges should be several inches above the surface of the water when a basin is flooded.

Several methods of flooding basins are practiced. In one a ditch is run from the supply ditch at the head through each alternate row space, and the basins on each side are flooded in pairs, beginning with the lowest. This plan is shown in outline in Figure 22. In the other method water is allowed to flow through openings into each basin of a tier in a zigzag course from the top to the bottom of the orchard. In this plan the upper basins receive the most water. Under gravity canals, where water is abundant, the water is turned into the upper basin until it is full, when it overflows into the next, and so on down the tier. The irrigator then begins at the lower end and repairs the breaks, leaving each basin full of water.

Where this method is practiced it frequently happens that land on which alfalfa has been grown is planted to fruit trees. In plowing down the alfalfa and setting out the trees the levees undergo little change, and the checks can be flooded if it is considered best. A better plan is to furrow the floor of each check, as shown in Figure 24. The water is admitted through the check box which was used for the alfalfa and conducted into a short head ditch, from which it is distributed to the furrows. The chief

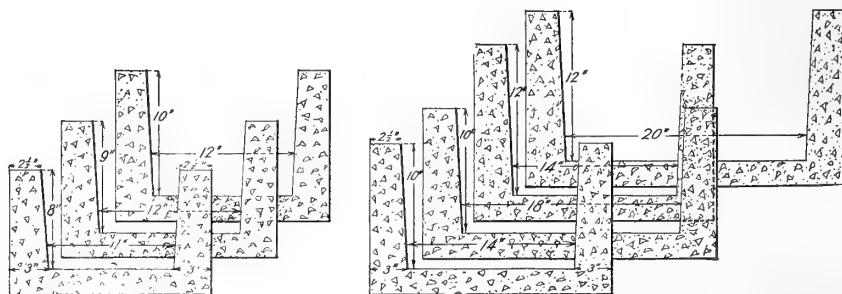


FIGURE 13—COMMON SIZES OF CONCRETE HEAD FLUMES



objection to this method is that the checks are too small for orchard tracts in furrow irrigation.

The best orchardists believe that frequent examinations of stems, branches, foliage and fruit are not enough. The roots and soil should likewise be examined. The advice of such men to the inexperienced is: Find out where the bulk of the feeding roots is located, ascertain the nature of the soil around them and make frequent tests as to the moisture which it contains. In a citrus orchard of sandy loam samples are taken at depths of about three feet, and the moisture content determined by exposing the samples to a bright sun for the greater part of a day. It is considered that six per cent by weight of free water is sufficient to keep the trees in a vigorous condition.

Doctor Loughridge, of the University of California, in his experiments at Riverside, California, in June, 1905, found an average of 3.5 per cent in the upper two feet and an average 6.16 per cent below this level in an orchard which had not been irrigated since October of the preceding year. It had received, however, a winter rainfall of about sixteen inches. On examination it was found that the bulk of the roots lay between the first and fourth foot. In June these trees seemed to be merely holding their own. When irrigated on July 7 they began to make new growth. A few days after the water was applied the percentage of free water in the upper four feet of soil rose to 9.64 per cent. The results of these tests seem to indicate that the percentage by weight of free moisture should range between five and ten per cent in orchard loams.

Many fruit growers do not turn on the irrigation stream until the trees begin to show visible signs of suffering, as a slight change in color or a slight curling of the leaves. In thus waiting for these signals of distress both trees and fruit are liable to be injured. On the other hand, the man who ignores these

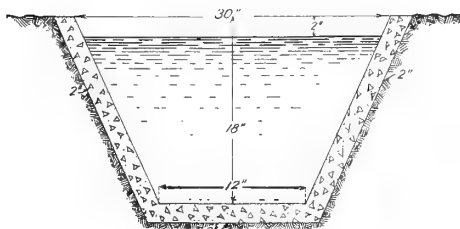


FIGURE 14—EARTHEN HEAD DITCH LINED WITH CONCRETE

symptoms and pours on a large quantity of water whenever he can spare it, or when his turn comes, is apt to cause greater damage by an overdose of water.

For nearly half the entire year the fruit trees of Wyoming and Montana have little active, visible growth, whereas in the citrus districts of California and Arizona the growth is continuous. A tree when dormant gives off moisture, but the amount evaporated from both soil and tree in winter is relatively small, owing to the low temperature, the lack of foliage and feeble growth. A heavy rain which saturates the soil below the usual covering of soil mulch may take the place of one artificial watering, but the light shower frequently does more harm than good. The number of irrigations likewise depends on the capacity of the soil to hold water. If it readily parts with moisture light but frequent applications will produce the best results, but if it holds water well a heavy application at longer intervals is best, especially when loss by evaporation from the soil is prevented by the use of a deep soil mulch.

In the Yakima and Wenatchee fruit growing districts of Washington the first irrigation is usually given in April or early in May. Then follow three to four waterings at intervals of twenty to thirty days. At Montrose, Colorado, water is used three to five times in a season. At Payette, Idaho, the same number of irrigations is applied, beginning about June 1 in ordinary seasons, and repeating the operation at the end of thirty-day intervals. As a rule the orchards at Lewiston, Idaho, are watered three times, beginning about June 15. From two to four waterings suffice for fruit trees in the vicinity of Boulder, Colorado. The last irrigation is given on or before September 5, so that the new wood may have a chance to mature before heavy freezes occur. In the Bitter Root Valley, Montana, young trees are irrigated earlier and oftener than mature trees. Trees in bearing are, as a rule, irrigated about July 15, August 10 and August 20 of each year. In San Diego County, California, citrus trees are watered six to eight times and deciduous trees three to four times in a season.

The duty of water for one acre as fixed by water contracts varies all the way from one-fortieth to one four-hundredth of a cubic foot per second. In general the most water is applied in districts that require the least. Wherever water is cheap and abundant the tendency seems to be to use large quantities, regardless of the requirements of the fruit trees. In Wyoming the duty of

water is seldom less than at the rate of a cubic foot per second for seventy acres. In parts of Southern California the same quantity of water not infrequently serves 400 acres, yet the amount required by the fruit trees of the latter locality is far in excess of that of the former.

In recent years the tendency all over the West is toward a more economical use of water, and even in localities where water for irrigation is still reasonably low in price it is rare that more than two and one-half acre feet per acre is applied in a season. This is the duty provided for in the contracts of the Bitter Root Valley Irrigation Company of Montana, which has 40,000 acres of fruit lands under ditch. Since, however, the water user is not entitled to receive more than one-half of an acre foot per acre in any one calendar month it is only when the growing season is long and dry that he requires the full amount.

In the vicinity of Boulder, Colorado, the continuous flow of a cubic foot per second for 105 days serves about 112 acres of all kinds of crops. This amount of water, if none were lost, would cover each acre to a depth of 1.9 feet. In other words, the duty of water is a trifle less than two acre feet per acre.

In 1908 the depth of water used on a twenty-one and a half acre apple orchard at Wenatchee, Washington, was meas-

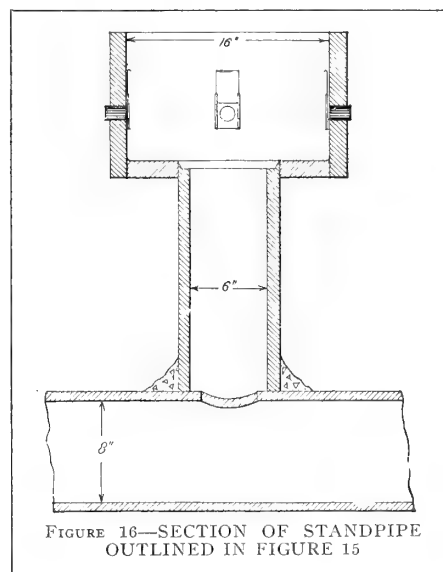


FIGURE 16—SECTION OF STANDPIPE OUTLINED IN FIGURE 15

ured and found to be twenty-three inches. The trees were seven years old, and produced heavily. This orchard was watered five times, the first on May 13 and the last on September 23. In San Diego County, California, one miner's inch (one-fiftieth of a cubic foot per second) irrigates from six to seven acres near the coast, where the air is cool and evaporation low, but twenty miles or so inland the same amount of water is needed for about four acres.

On the sandy loam orchards of Orange County, California, it has been demonstrated that two acre inches every sixty days is insufficient to keep bearing trees in good condition. The rainfall of this locality averages somewhat less than twelve inches per annum, but about

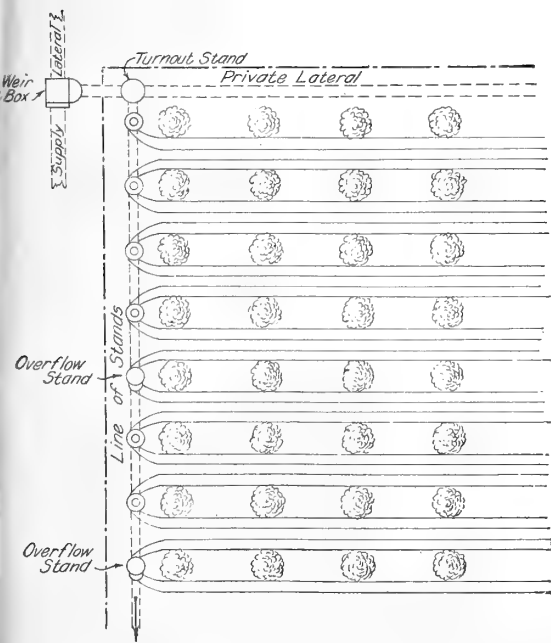


FIGURE 15—USE OF PIPES IN FURROW IRRIGATION

ninety-five per cent of the total falls between November and May, inclusive.

The most reliable, and in many ways the most valuable, records pertaining to duty of water on orchards have been obtained by the water companies of Riverside County, California. Here more or less irrigation water is used every month of the year. Figure 25 is a graphic representation of the average amount of water used per month in a period of seven years by the Riverside Water Company in irrigating about 9,000 acres, of which nearly 6,000 acres are planted to oranges and the balance to alfalfa. The figures given in the diagram represent depth in feet over the surface watered. In the following table is given the average duty of water per month in acre feet per acre under the same system from December 1, 1901, to November 30, 1908, a period of seven years. The table also includes the average monthly rainfall at Riverside, California, for the same period, and adding the quantity of water applied in irrigation in any one month to the rainfall of that month gives the total moisture received by the soil:

Month	Average depth per acre Feet	Average rainfall Feet	Total water applied Feet
December	0.159	0.109	0.268
January	.123	.170	.293
February	.046	.190	.236
March	.078	.316	.394
April	.177	.068	.245
May	.291	.023	.314
June	.274	.003	.277
July	.272	.002	.274
August	.269	.000	.269
September	.243	.015	.258
October	.189	.043	.232
November	.169	.073	.242
Totals	2.29	1.01	3.30

A light shower followed by warm sunshine may refresh the foliage of fruit trees, but its effect on the soil is more likely to be injurious than otherwise. A brief, pelting rain followed by sunshine forms a crust on the surface of most soils, and if this is not soon broken up

by cultivation it checks the free circulation of air in the soil, and also tends to increase the amount of water evaporated.

It has been found that the amount of moisture held by the soil, the temperature of both soil and air, and the rate of wind motion are the chief factors in the evaporation of water from soils. The influence of moisture is shown in the following figures, obtained from tank experiments made at Tulare, California, covering the period from June 15 to September 15, 1904:

	Amount of water applied Inches	Loss by evaporation Inches	Per cent
Tanks 1 and 2.....	0.0	0.45	....
Tanks 3 and 4.....	3.3	3.5	106.0
Tanks 5 and 6.....	4.9	4.6	94.0
Tanks 7 and 8.....	6.6	5.5	83.6
Tanks 9 and 10.....	8.2	6.6	80.0
Tanks 11 and 12....	9.8	7.9	79.5

The results of other experiments have shown that when the water is applied to the surface of orchard soils the loss by evaporation is very great so long as the top layer remains moist. Even in light irrigations this loss in forty-eight hours after the water is put on may amount to from ten to twenty per cent of the volume applied. In order to reduce this loss and moisten the soil around the roots of trees the practice of running small streams of water in deep furrows has become quite common. In applying water in this way the top soil remains at least partially dry, the bulk of the water soon passes beyond the first foot, and the surface can be cultivated soon after the water is turned off.

The well known effect of temperature on evaporation is shown in Figure 26. The dotted line shows the mean monthly temperatures at Tulare, California, from January 1, 1904, to December 31, 1905, and the solid line the monthly evaporation from a water surface for the same time.

The effect on evaporation of a layer of dry granular soil when placed above moist soil has been shown by a series of experiments conducted in tanks by irrigation investigations of this office. These tanks are water-jacketed and placed in the open under normal conditions as regards sunshine, wind and temperature. Each tank holds about three-fourths of a ton of soil, and is weighed at stated intervals in a manner shown in Figure 27. The results of experiments made at Davis, California, in 1908 were as follows:

Tanks 1 and 2, no mulch—Average weight of tanks September 1, 1,104.7 pounds; total loss for 32 days, September 1 to October 3, 33.25 and 35.93 per cent.

Tanks 3 and 4, 3-inch mulch—Average weight of tanks September 1, 1,090 pounds; total loss for 32 days, September 1 to October 3, 14.25 and 15.17 per cent.

Tanks 5 and 6, 6-inch mulch—Average weight of tanks September 1, 1,082 pounds; total loss for 32 days, September 1 to October 3, 5.75 and 6.12 per cent.

Tanks 7 and 8, 9-inch mulch—Average weight of tanks September 1, 1,085.2 pounds; total loss for 32 days, September 1 to October 3, 0.75 and 0.80 per cent.



FIGURE 17—METHOD OF IRRIGATING FROM IRON STANDPIPES CONNECTED WITH PRESSURE PIPES

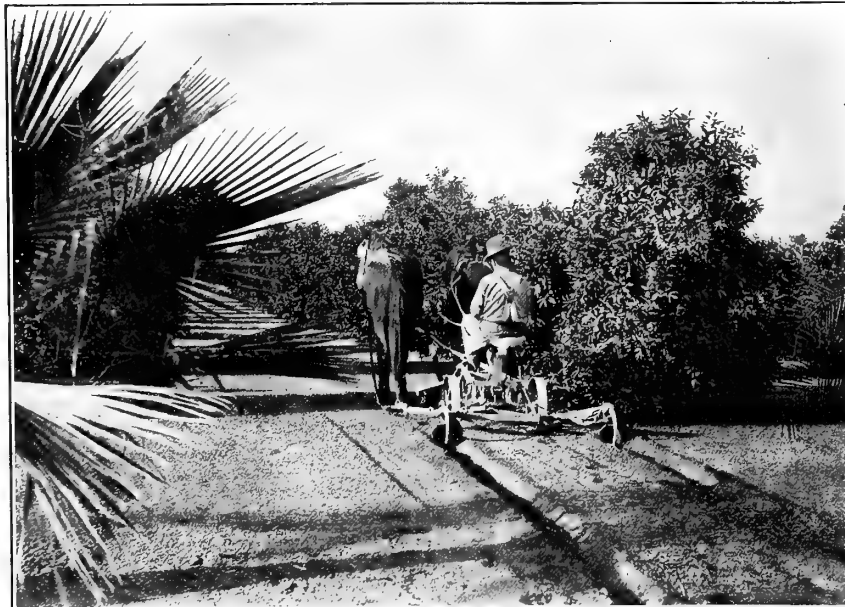


FIGURE 18—MAKING FURROWS IN ORCHARD

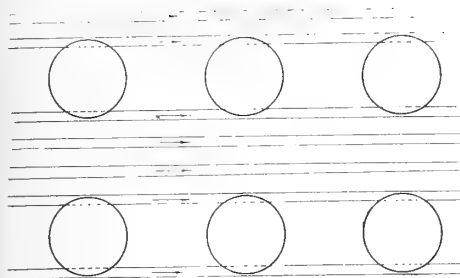


FIGURE 19—FURROW IRRIGATION, SHOWING DRY SPACES

The soil first received an irrigation of six inches in depth over the surface, and in the tanks which had no mulch over one-third of this amount was evaporated in thirty-two days, while less than one per cent was evaporated in the tanks which were protected by a nine-inch mulch.

Similar experiments carried on at Wenatchee, Washington, in June, 1908, showed the following losses in twenty-one days: No mulch, fourteen and one-third per cent of water applied; three-inch mulch, four per cent; six-inch mulch, two per cent, and nine-inch mulch one per cent.

From the foregoing it is evident that Western orchardists can prevent the greater part of the evaporation losses by cultivating orchards to a depth of at least six inches as soon as practicable after each irrigation.

In the preceding paragraphs attention has been called to the large amount of water which is vaporized from warm, moist soils. We wish here to call attention to another loss of a different character. In all modes of wetting the soil, but more particularly when deep furrows are used to distribute the water, a part is liable to sink beyond the deepest roots. As a rule the longer the furrow the greater is the loss from this cause. In furrows about one-eighth of a mile long Dr. Loughridge, in his experiments at Riverside, California, found that in some parts of the orchard the soil was wet as a result of a recent irrigation to depths of twenty to twenty-six feet, while in other parts the moisture had not penetrated beyond the third foot.

One of the best ways of finding out whether much water is lost by deep percolation is to dig cross trenches as deep as the feeding roots go. The moisture which passes the deepest roots in its downward course may be considered as wasted.

An example of fairly even and desirable moisture distribution from furrows

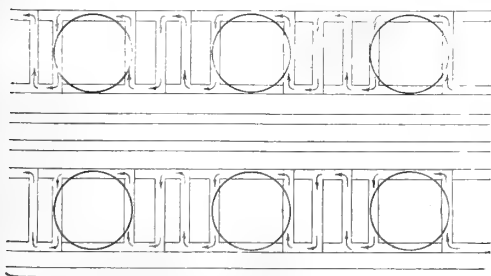


FIGURE 20—CROSS FURROWING DRY SPACES

is shown in sections XI and XII of Figure 28, where the three curved lines show the margins of wetted moisture at the end of one, two and three days, respectively.

The loss of water is not the only effect of deep percolation. The water which escapes in this and other ways usually moves through the soil at a rather slow rate of speed until it reaches some underground body of water at a lower level. In case orchards have been planted at these lower levels when the sub-soil was dry care should be exercised in observing the rise of the ground water level. The small post-hole auger shown in Figure 29 is one of the most convenient tools to use in making test wells to keep track of the behavior of the ground water. Before the deepest roots of the fruit trees are submerged artificial drainage ought to be provided. Otherwise the ground water will at first lessen the yield, and finally destroy the trees.

The drainage of orchard tracts usually progresses in more or less distinct and separate stages. When the ground water begins to be a menace the natural ravines in the vicinity are cleared of weeds and other rubbish, and deepened. If the ground water continues to rise the open drains are deepened and extended, or else the excess water is withdrawn through a covered drain.

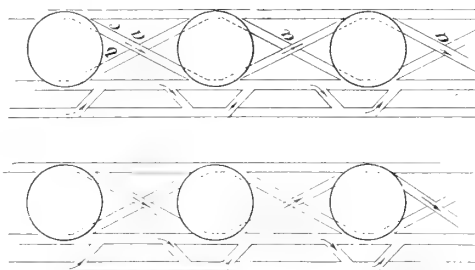


FIGURE 21—USE OF ZIG-ZAG FURROWS

Open drains in orchards occupy valuable land, obstruct field work and are expensive to maintain. Some of these objections can be lessened, if not entirely removed, by locating such drains along the lower boundary of the tract. When this plan is followed covered drains are frequently laid among the trees, and discharge into the open drains. Sometimes the source and direction of the waste water which is waterlogging an orchard can be traced beneath the surface. In this event it is well to try to intercept its passage before it reaches the trees. This can be done by an open drain, but a covered pipe drain of the required size is preferable. Where durable lumber is cheap box drains similar to that shown in Figure 30 may be used. Where lumber is high in price it will be more economical to use pipe drains made of either clay or cement. The former is most frequently used for sizes ranging from four to eight inches in diameter and the latter for sizes ten inches and over. The clay or tile drains are made one foot in length, but in using cement for the larger sizes the length may be increased to two, and even three feet.

The drainage of irrigated lands differs in many respects from that common to the humid States of Iowa, Illinois or

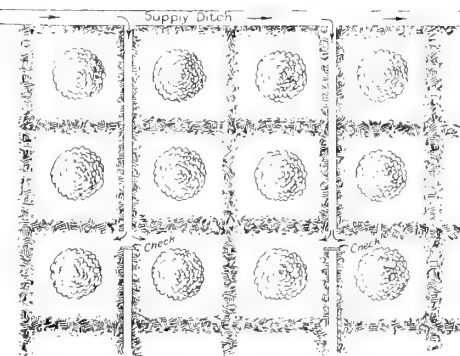


FIGURE 22—BASIN METHOD OF IRRIGATION

Ohio. In irrigated districts the drains are larger and are laid deeper. While four-inch tile drains may be used in places six-inch drains are to be preferred, and should be considered as the smallest desirable size. The depth at which they are laid ranges from four to seven feet, and five to six feet are required for orchards. A grade of five feet to the mile is about the least that should be used, and wherever practicable it should be increased to ten feet to the mile.

In laying drains that are likely to become clogged with silt or roots, or both, a small cable is laid in each line, and at distances of 300 to 500 feet sand boxes similar to Figure 31 are placed, so as to facilitate cleaning the tiles with suitable wire brushes.

The large majority of California fruit growers do not grow marketable crops between the trees. They believe in clean culture, except where leguminous crops are used to renovate and fertilize the soil. From the standpoint of the large commercial orchard and the well-to-do proprietor this practice has much to recommend it. The planting of such an orchard is regarded as a long-time investment. Little, if any, returns are expected for the first few years, but when the trees approach maturity and are in full bearing the anticipated profits are supposed to compensate the owner for all the lean years. Any treatment, therefore, which tends to rob the soil of its plant food when the trees are young or to retard their growth is pretty certain to lessen the yields and the consequent profits in later years. Professor E. J. Wickson, director of the California Experiment Station, tersely expressed the prevailing opinion on this question in California in his work, "California Fruits, and How to Grow Them," in the following language: "All intercultural

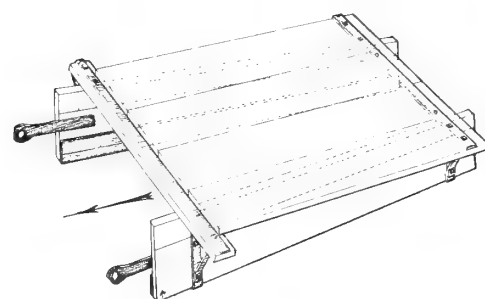


FIGURE 23—RIDGER USED IN BASIN IRRIGATION

are a loan made by the trees to the orchardist. The term may be long and the rate of interest low, but sooner or later the trees will need restoration to the soil of the plant food removed by inter-cropping."

Mr. S. W. McCulloch, who controls 150 acres of citrus orchards in Southern California, goes further in stating: "It is always detrimental to the development of an orchard to grow crops between the trees. In some cases the effect is not marked aside from securing less rapid growth, but it will affect the crops of fruit for several years, and in the end nothing will be gained."

Notwithstanding all this the poor man must needs make the loan or his children may starve. The settler on a small tract set out to young trees cannot afford, if his means are limited, to wait four or five years for the first returns. He must produce crops between the rows, and the question for him to consider is how this can be done with the least possible injury to the trees. A plentiful supply of water and a deep, rich soil are the essentials of inter-cropping. In districts that depend on a meager rainfall of fifteen to twenty inches per annum, or where irrigation water is both scarce and costly, the practice becomes of doubtful value under any circumstances. In most of the fruit districts of the West water for irrigation is still reasonably low in price, and the extra amount required for inter-cropping represents but a small part of the net gains from such crops.

Shallow-rooted plants are considered the most desirable for this purpose. Squash, melons, sweet potatoes, tomatoes and peanuts are the most common in California. The cultivation is done with one horse and a small cultivator. A clear space three to four feet wide is left on each side of the young trees. In the Verde River Valley of Arizona strawberries, lettuce, onions and melons are raised in the young orchards. In parts of Idaho alfalfa fields are frequently plowed under to plant trees. When this is done berries, beans, melons, onions and tomatoes can be grown between rows for several years without any apparent injury to young trees. In Northern Colorado raspberries, gooseberries, currants, as well as corn, beans and peas are often planted in orchards, while in Southwestern Kansas it is usually cabbage, melons and sweet potatoes.

In the young apple orchards of Hood River Valley, Oregon, strawberries are frequently planted between the rows. The manner in which this is done, as well as the system of contour planting which is there practiced, is shown in Figure 32. The manager of a large apple orchard company in Montana states that no appreciable effect is noticed on apple trees as a result of growing potatoes, cabbage, beans, onions and other vegetables between the trees, providing the inter-crops are well cultivated and irrigated. In the fruit districts of Washington inter-cropping is a common practice. In 1907 a fruit grower raised on ten acres of two-year-old trees cantaloupes, tomatoes, peppers, cucumbers,

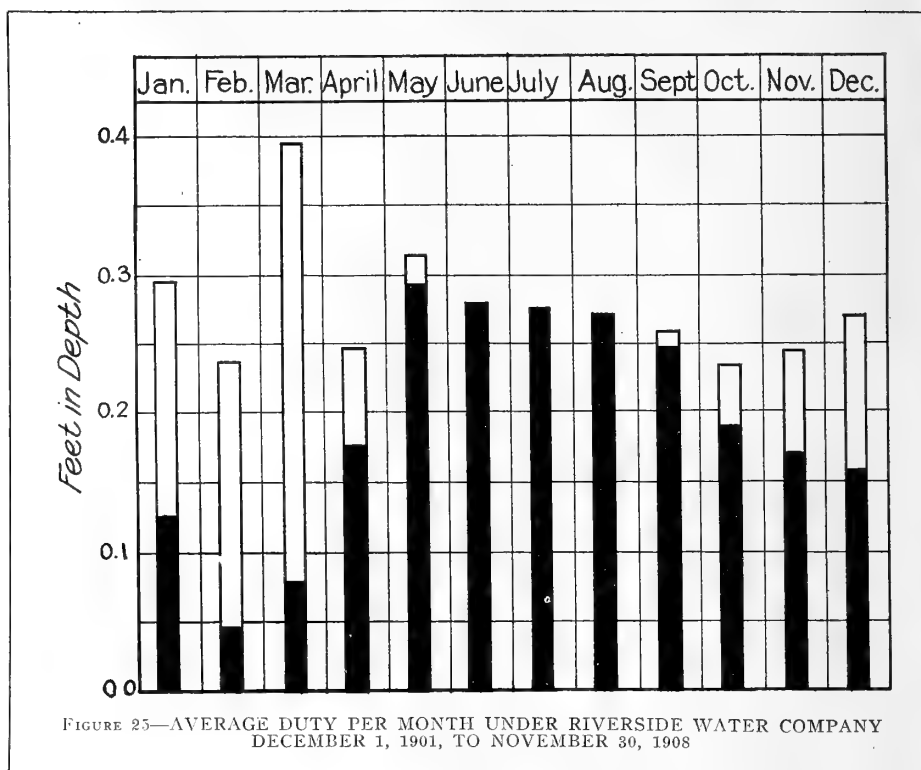


FIGURE 25—AVERAGE DUTY PER MONTH UNDER RIVERSIDE WATER COMPANY  
DECEMBER 1, 1901, TO NOVEMBER 30, 1908

corn, radishes, beans, peas, potatoes and turnips, all of which netted him \$2,086.50, or an average of \$208.65 an acre.

While opinions differ regarding the wisdom of growing such crops as have been named between the tree rows, most fruit growers are convinced of the beneficial effects of cover crops. Notwithstanding the scarcity and high value of water in the Riverside citrus district the superintendent of a large fruit company has for years grown peas and vetch in the orange and lemon orchards under his management, and advocates the free use of irrigation water to supplement the winter rains for the rapid and vigorous growth of such crops. In the walnut groves of Orange County, California, bur clover is sown in the fall, given one or two irrigations during the winter if the rainfall is below the normal and plowed under in April.

The cost of such cover crops as peas, vetch or clover includes the seed, the labor of sowing it, the water and the time required to apply it. These items, according to Dr. S. S. Twombly, of Fullerton, California, amount to from \$2.50 to \$3.25 per acre. Twenty tons per acre of green material is perhaps an average crop. In this tonnage there would be about 160 pounds of nitrogen, which, at twenty cents per pound, represents a value of \$32 per acre for a cover crop like vetch.

When water is used outside of the regular irrigation period or, what is in many cases equivalent, outside of the growing season it is termed winter irrigation. Over a large part of the arid region the growing season is limited by low temperatures to 150 days or less, and when the flow of streams is utilized only during this period much valuable water runs to waste.

It was for the purpose of utilizing some of this waste that the orchardists

of the Pacific Coast states and Arizona began the practice of winter irrigation. The precipitation usually occurs in winter in the form of rain, and large quantities of creek water are then available. This water is spread over the orchards in January, February and March, when deciduous trees are dormant. The most favorable conditions for this practice are a mild winter climate, a deep, retentive soil which will hold the greater part of the water applied, deep-rooted trees and a soil moist from frequent rains.

The creek water which was applied to some of the prune orchards of the Santa Clara Valley, California, during the winter of 1904 was measured by the agents of this office with the following results: From February 27 to April 23, 1,241 acres were irrigated under the Statler ditch to an average depth of 1.58 feet. From February 12 to April 23, 2,021 acres were irrigated under the Sorosis and Calkins ditches to an average depth of 1.75 feet. In the majority of cases the orchards which are irrigated in winter in this valley receive no additional supply of moisture other than the rainfall of about sixteen inches.

In the colder parts of the arid region winter irrigation is likewise being practiced with satisfactory results. The purpose is not only to store water in the soil, but to prevent the winter-killing of trees. Experience has shown that it is not best to apply much water to orchards during the latter part of the growing season, since it tends to produce immature growth which is easily damaged by frost. In many of the orchards of Montana no water is applied in summer irrigation after August 20. Owing, however, to the prevalence of warm chinook winds, which not only melt the snow in a night, but rob the exposed soil of much of its moisture, one or two irrigations are frequently necessary in mid-winter.

# SELECTING AND THE IRRIGATION OF ORCHARDS

BY DON H. BARK, IRRIGATION ENGINEER IN CHARGE OF INVESTIGATIONS OF IDAHO

**L**ARGER profits are no doubt made from orchards under favorable conditions than from any other crop grown in Idaho. This is true, however, only when the orchardist understands his business and when all conditions are right. Under adverse conditions the losses from orcharding may be equally as great as the gain under favorable conditions. Orchards require a larger outlay than almost any other crop at the start owing to the fact that the trees are expensive and that no returns can be had before the fifth year. This emphasizes the fact that great care should be taken at the outset in the selection of varieties and the site on which to plant the trees, as well as in the preparation of the land and the care of the trees after planting.

The selection of a favorable site at the outset is very essential, for even the best of trees and care will not bring large profits on a poor site. In localities susceptible to late spring frosts a high, sloping field should be selected. The most favored sites in this section are generally those which slope toward the north and northeast. These slopes do not receive the direct rays of the sun in the hot part of the day, and the trees will be held back to a considerable extent in the spring and the blossoms are not liable to appear until after all danger from frost is passed. Orchards do best on deep, well drained soil. Trees are gross feeders, and the soil should be loose enough so that the roots can readily penetrate to considerable depth. Almost any of our Idaho soils that fulfill the above requirements should grow good trees. Where one insists on planting an orchard on soil that is underlaid at a shallow depth, with hardpan, it has been found to be beneficial to break the hardpan under each tree, either by mechanical means or by the use of some explosive. This loosens up the soil so that the roots and water can get down through the hardpan. The action of roots and water will soon soften and disintegrate all but the most persistent of hardpan. Our raw soils as a rule contain but little humus, and for that reason orchards will do much better if planted upon ground that has been in clover or alfalfa for two or three years. Many do not care to wait until the clover has added the necessary humus and insist upon planting orchards on raw soils. In such cases the ground should be leveled before the trees are planted and red clover should be planted as a cover crop during the first or second year. This supplies the necessary humus and nitrogen at a very rapid rate, and in many cases orchards do as well as when planted on soil that has grown clover for some time. Alfalfa should never be planted in an orchard, as it is a deep rooted, gross feeder and is too hard to kill out.

After one has selected the site for an orchard and has decided whether he will plant it on new or old ground the next thing to think about is the laying out of the ground and the preparation of the

land. Should the orchard be planted on raw ground about the first thing that should be thought of is the supply ditch for the land. This, of course, should be built of sufficient size and capacity, and should be made to run along the highest side of the field. The proper grade for supply ditches on ordinary soils is about two inches to the hundred feet.

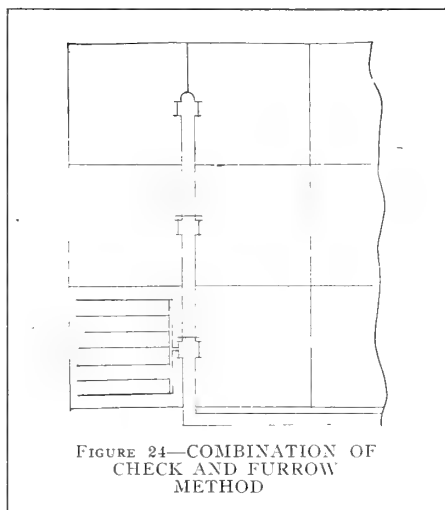


FIGURE 24—COMBINATION OF CHECK AND FURROW METHOD

Several kinds of systems are used for the irrigation of orchards, but the furrow system is by far the most common in this locality, and is to be recommended in most cases. Where the furrow system is used the tree rows should be laid out at the beginning according to the topography of the land and in such directions that the water can be made to run down along and parallel to the tree rows. Many who are new at the business do not consider that the ground needs much leveling and preparation before putting in orchards, as they are inclined to think that the water may be guided in almost any direction by means of deep furrows along the tree rows. This, however, is a mistake. The land should be thor-

oughly leveled, so that the ground can be irrigated evenly over its entire area. This is found to be essential when cover crops are planted in the orchard. If the ground is uneven and poorly prepared an even stand of the cover crop, which is so essential, cannot be secured. With ground that is quite uniform and has only small irregularities of surface the common float, or plank leveler, is sometimes all that is required for leveling. This should be run across at least once in each direction in order to secure an even surface. If knolls and irregularities exist that cannot be taken off and evened up by this method the Fresno scraper will be found an efficient tool. In leveling the ground for irrigation it must be borne in mind that the hollows which are filled with loose dirt will settle, and must be filled full enough to make an allowance for the settlement after the water is applied.

The Shuart grader is a tool which is coming much into use for the preparation of new land. Although it will not move as much earth in a day as the common Fresno better work can be done with it in the hands of a novice.

It has been my experience that it is always best to run the furrows and tree rows down the greatest slope unless it is excessive, in which case they must be circled around the side hill at a slight grade more nearly approaching a contour. It is natural for water to run down the steepest slope, and it will need much less attention than if run in some other direction. Washing is prevented by using some device to regulate the flow of water in each furrow. Lath tubes in the ditch banks are frequently used for this purpose. Steep slopes must be irrigated with comparatively small amounts of water in each furrow in order to prevent washing. Many orchards have been planted in the last few years upon steep side hills, many of which are far too steep to allow the water to be run down the slopes. In

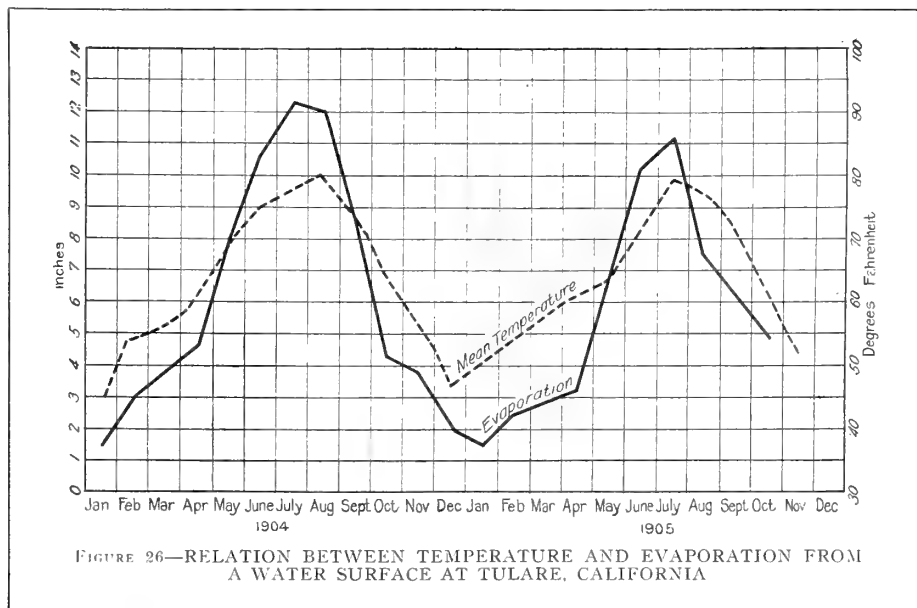


FIGURE 26—RELATION BETWEEN TEMPERATURE AND EVAPORATION FROM A WATER SURFACE AT TULARE, CALIFORNIA



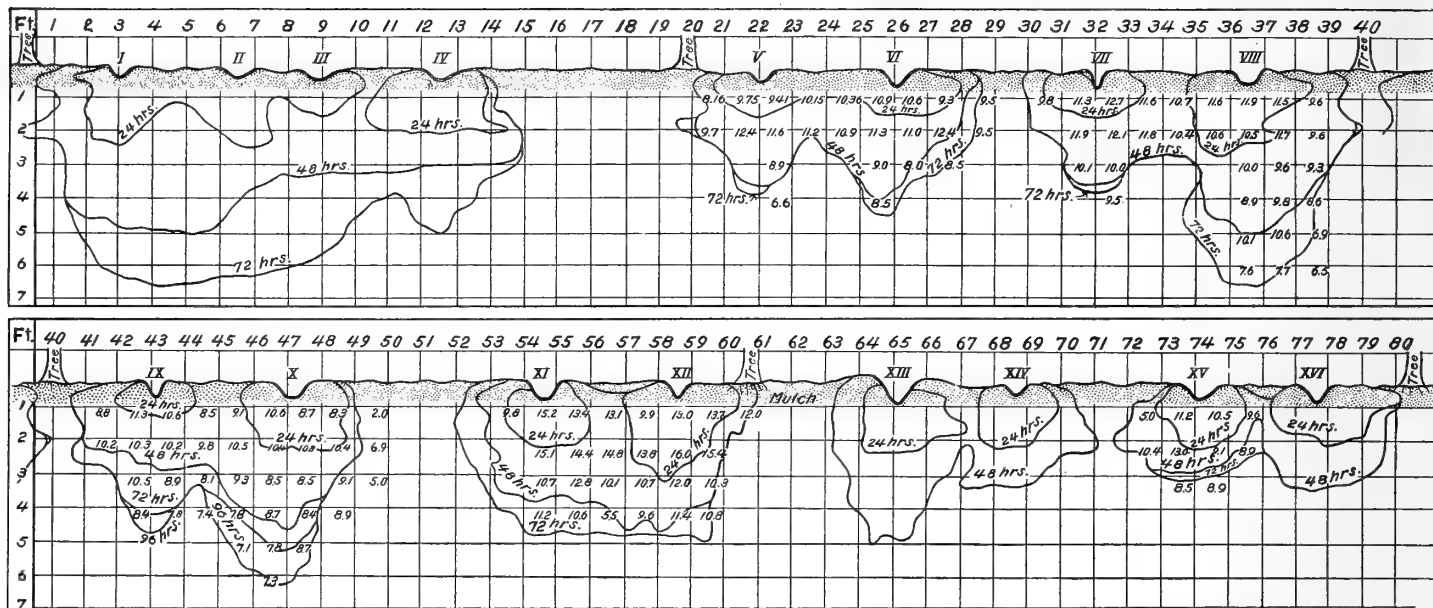


FIGURE 28—OUTLINES OF PERCOLATION UNDER SIXTEEN FURROWS IN ORCHARD 58, UNDER GAGE CANAL, RIVERSIDE, CALIFORNIA

this case the head ditch should be brought straight down the side hill, the water being carried in a wooden or concrete flume. The furrows along the tree rows are then made to diverge each way from this flume around the hill, with but a slight fall. The water is checked up opposite the end of each tree row by short pieces of lath, resting against cleats on the sides of the flume, and the amount for each furrow is regulated by tin or wooden slides on the outside of the flume. Perhaps the best and most efficient system of orchard irrigation is the one which is now in operation at Lewiston. This is a pressure system, the water being carried in pipes which are laid under ground similar to an ordinary water works system, a hydrant being placed at the upper end of each tree row. This system is very saving of water and has been in successful operation at Lewiston for the past several years. The water for a good share of our city lots in this town is also carried from the ditch in underground pipes in much the same manner.

An irrigation ditch is the best insurance that one can have against loss of trees in transplanting. If prime, hardy stock, in good condition, can be secured there is small necessity of losing over two per cent of the trees after they are set out. Trees with plenty of root should be secured, and then care should be used that the roots never be left to dry out from the time the tree leaves the nursery until it is set in the orchard. The hole should be dug before the trees are unpacked or taken from the trench where they have been "heeled in." After this is done the trees may be hauled to the orchard, the roots being kept covered by a wet blanket or straw while en route. The holes should be plenty large, say about eighteen inches square and eighteen inches deep, for one year old trees. After the roots are pruned the tree should be held upright in the hole some six inches deeper than in its former position in the nursery while the hole is filled half full of top soil. Water

from the nearby irrigation furrows should then be let in until the hole is nearly full of water, after which the tree should be worked up and down slightly until the roots are thoroughly "puddled in" and the soil has come into intimate contact with all the roots. The hole should then be filled up with dry soil, leaving the tree planted three or four inches deeper than in the nursery. If this method is carried out the soil will be settled firmly around all of the roots, the same as an old tree, and growth will start just as soon as the weather warms up.

A large per cent of all losses in transplanting is caused by the roots being allowed to dry out in transit or by setting the trees haphazardly in dry soil. One is always well repaid for the care he takes in planting his trees.

During the first season an irrigation furrow along one side of each tree row will probably be sufficient, but during the second year a furrow should be run along each side of the tree rows. As the roots spread during the succeeding years more and more of the area between the rows must be irrigated. Cultivation, of course, must go hand in hand with irrigation, for much moisture can be saved by maintaining a dust mulch on the surface. My department has shown by repeated experiments that there is four times as much evaporation from an uncultivated field in a single month as from one covered with a dry three-inch soil mulch. Deeper mulches are also more effective in retaining moisture, for it was shown that there is sixteen times as much evaporation from an uncultivated soil as from one covered with a nine-inch dry soil mulch. This strikingly shows the effectiveness of cultivation in retaining moisture. This is not the only advantage, however, as cultivation stirs up and aerates the soil as well, which is also highly desirable and beneficial.

Years of observation and experiment have demonstrated the fact that soils must not be saturated at any time if

good results are to be secured. Plants and trees require that there be some air in the soil, and seem to do best when about half of the pore space of the soil is filled with air and the other half with water. Thus we see the harmful effects that may result from over-irrigation, which fills all of these pore spaces and drives out the air which is so essential.

Different soils and seasons will require a different number of irrigations during a season, and for this reason no hard and fast rule can be laid down as to the number of irrigations to apply during the season. An experienced irrigator seems to know by intuition when his crops need irrigation, but this cannot always be depended upon by the beginner. A good way to tell when trees



FIGURE 27—TANK EXPERIMENTS AT RENO, NEVADA, TO DETERMINE EFFECT OF SOIL MULCHES IN CHECKING EVAPORATION

need irrigating is to dig down into the soil near the roots and examine the soil. If the soil retains its shape when squeezed in the hand there is probably sufficient moisture, but if it has a tendency to fall apart the trees should be irrigated at once. Much experimentation must yet be done before we are able to tell as to what times during the season the trees need the most water. Our experiment station should now be working along this line.

A few general truths are self-evident, however, and have already been demonstrated. There is a period in the growth

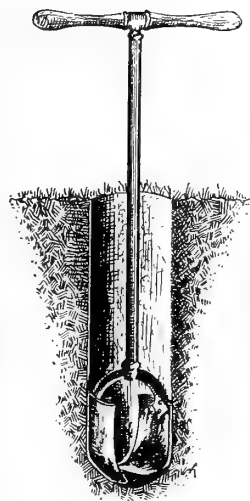


FIGURE 29—SOIL AUGER  
Used to locate ground-water  
level.

when the fruit increases rapidly in size. With apples this is usually in June and July, during which time the trees must not be allowed to want for water.

Young trees grow very rapidly in this locality, and cases are common in which the tender shoots have been killed and the trees ruined by early fall frosts. Water should not be applied to young trees in this locality after August 20th or September 1st, but should be withheld in order that the rapid growth may stop and the wood toughen up before the early freezes.

Many inquiries have been received during the past year in regard to the

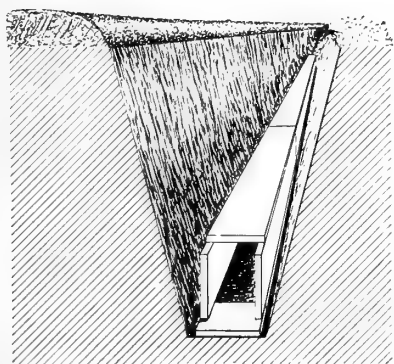


FIGURE 30 - BOX DRAIN



FIGURE 32—ORCHARD SHOWING STRAWBERRIES BETWEEN ROWS OF TREES

water requirements of orchards. This has never been fixed within very narrow limits. It unquestionably varies with the class of soil and sub-soil, and with the climate, as well as with the skill of the irrigator.

I have been carrying on the largest duty of water investigation during the past year that was ever attempted. In co-operation with the state engineer I have measured the yields produced and the water used upon over 120 different fields in different parts of the state, and some very interesting results have been secured. Unfortunately no orchards were included in the investigation, but we are able to reason back very closely from what was required by other crops, such as potatoes, etc., and I am of the opinion that from one to one and a half feet in depth during the season will be found sufficient for orchards on ordinary Boise Valley soils. This amount would be supplied during a season with but a trifle less than one-half a miner's inch per acre. The investigation will be carried on again during the coming year, and it is hoped to include orchards in the investigation.

In summing up the many factors which the orchardist must take into consideration I wish to emphasize the following:

1. A good site which is free from frost must be selected, and it is highly desirable that the orchard be planted on deep, well drained soil.
2. The ground should be well leveled and laid out for irrigation. The strips between the trees should also be prepared so that water can be economically applied.
3. Good stock should be selected, and the roots should never be allowed to dry out from the time the tree is dug until it is planted again. A good sized hole should be dug and the roots should be thoroughly "puddled in" with water when the tree is planted.

4. The soil of orchards should never be saturated with water. Plant growth demands that there be some air in the soil. There is most need for water in June and July and the first part of August.

5. A deep dust mulch, such as is produced by thorough cultivation, is beneficial in conserving moisture.

6. Young trees should never be irrigated too late in the fall.

7. The condition of the soil should be closely watched in order to determine when to irrigate. On ordinary soils orchards require from one to one and a half feet in depth during the season.

In conclusion let me say that the good sense of the tiller of the soil must be brought to bear in the application of water to his land. Study the surrounding conditions, and let those conditions be your guide—do this and success will come, in face of the many failures of those lacking in observation.

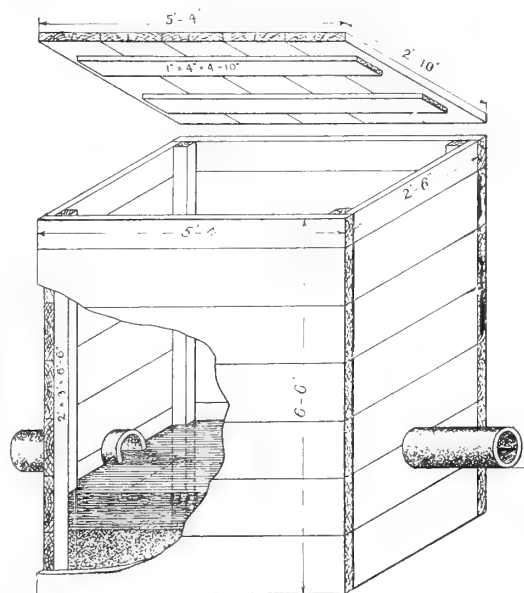


FIGURE 31—SAND BOX IN TILE LINE

# BEST METHODS OF APPLYING WATER TO CROPS

BY SAMUEL FORTIER, CHIEF OF IRRIGATION INVESTIGATIONS, EXPERIMENTAL STATIONS, U. S. DEPARTMENT OF AGRICULTURE

SIXTY years ago the practice of irrigation was new to the people of this country. In the gradual development since then many methods and devices have been tried, but comparatively few have been successful. Costly experiments in irrigation have been made, but in only a few cases have the results justified the expense.

Out of these trials and failures there have been evolved, however, certain well established ways of doing things, which under given conditions are considered superior to any other methods yet devised. The purpose of the writer in preparing this article is to present some of the features of irrigation practice which have successfully stood the test of repeated trials under widely different conditions. It is not claimed that the methods herein described represent the highest achievement of Western people in this direction. They but mark a step in a rapid development in which that which is considered best this year may be superseded by something better next year.

The agricultural wealth of that vast region lying west of the Missouri River was first made known by men who were poor in worldly goods but rich in those physical and mental endowments which go to make up the best type of citizenship. Their poverty, unfortunately, compelled them to make use of the cheapest methods in rendering the arid lands productive. Water was led from the nearest stream in a plow furrow, and the irrigator, in wet feet, tried to spread it over the field by the use of a shovel. The small and cheap equipment, consisting of a walking plow and shovel, has given place to a large number of implements, and the simple, laborious manner of applying water has been broadened out into more than a half dozen standard methods, yet in studying the latest improvements it is evident that many of them are mere makeshifts and that much remains to be done before the water of Western streams is efficiently and economically applied to arid lands. To aid in remedying this defect the irrigation investigations of the Department of Agriculture were instituted nearly a dozen years ago, to be carried on wherever practicable in conjunction with the Western experiment stations. One of the results of these investigations has been to show that a large part of the water annually diverted from natural streams is wasted by reason of the crude and defective means employed in its transportation, delivery and use. While it is true that the waste in irrigation waters is diminishing, land now being irrigated in many parts of the West with one-third of the water formerly applied, yet there is still much to be done before the highest duty is reached.

The far-reaching importance of better methods of using water is readily seen when one considers that the extent of land now irrigated, based on the estimates of Western state engineers and others, is approximately 13,000,000 acres.

According to the results of measurements made by the office of experiment stations the quantity of water which is diverted annually from streams and other sources of supply to water this extent of land approximates over 50,000,000 acre feet. It is believed that only about one-third of this volume of water is utilized in nourishing plant growth, the balance being wasted. As the writer has frequently pointed out, all of this waste of water cannot be prevented, but it is thought that enough might be saved to irrigate, under careful use, about 7,000,000 acres.

An irrigated farm resembles a city in that it should be skillfully laid out before many permanent improvements are made. In such preparatory work perhaps the most important feature consists of the location and construction of the network of ditches required to carry and distribute water to all parts of the farm and the head gates, turn-outs, pipes, flumes and road crossings which these ditches make necessary. Farm ditches are of two kinds, temporary and permanent. The former is intended to last through but one season, or for but one crop, and its location is not important. The latter should be as definitely fixed as any other permanent improvement on the farm. The location of all permanent ditches should precede the division of the farm into fields, the building of fences and the laying out of farm roads and lanes. The chief reason for this course is that there may be but one direction in which water will flow at the proper rate of speed. Too often the mistake is made of building ditches for only a part of the farm. This is pretty certain to cause, it may be years later, a complete change in most of the existing improvements or else a faulty arrangement of most of the essentials of an irrigated farm.

The head gate at the upper end of the supply ditch marks the point where the control of the canal company ceases and

that of the water user begins. Sometimes the water is measured out to the user. A concrete hydrant having a weir and portions of two distributing flumes are shown in Figure 1.

Formerly all water channels pertaining to the irrigated farm were formed in porous earth, which wasted a large part of the water through seepage. Wooden flumes were substituted later for part of the channels in earth, and pipes, concrete lined ditches and concrete flumes are now gradually taking the place of both earth and wood. The larger of the farm ditches in earth are made by first plowing a few furrows and afterwards removing the loose dirt by means of a wooden implement formed like the letter A. The smaller ditches can best be made by a lister plow attached to a sulky frame, Figure 7.

The location and construction of the principal water channels for the farm is followed by the preparation of the surface of the fields for irrigation. Four more or less distinct kinds of land under ditch are undergoing this change. There is the land which has been devoted to grain growing under the natural rainfall. The second class consists of low land covered by native grasses, cacti or low bushes. The third comprises the heavy sagebrush land of the Mountain States, while the fourth contains more or less shrubbery and small trees interspersed among smaller desert plants. In the first two kinds deep plowing is all that is necessary before beginning the work of grading and leveling, but when heavy desert growths are encountered special contrivances must be used. A covering of sagebrush is most easily removed by dragging a rail or heavy timber over the field, Figure 3. The stumps which remain are either grubbed out by hand or are plowed out. The mesquite of the Southwest and pine and juniper trees of the Northwest are grubbed out by hand



FIGURE 1—CONCRETE HYDRANT FOR MEASURING AND DISTRIBUTING WATER  
ARLINGTON HEIGHTS, RIVERSIDE, CALIFORNIA

or are removed by stump pullers, dynamite or fire.

Flooding the surface of land from field ditches or laterals is the most common means of wetting soil. This method is general in the Rocky Mountain States, and the conditions which prevail there seem to be well adapted to this mode of applying water. It can be used on quite steep slopes and in various other ways fits in with the requirements of the irrigator on the more elevated lands. It consists in leveling, grading and smoothing the surface of fields to such a degree that water will readily flow over it. As a means of distributing the water over the field small ditches or laterals are located along the best routes. These form a network of channels which cut up the field into small strips, which are usually from fifty to one hundred or more feet in width. Custom differs as to the direction of these field ditches. Sometimes they extend down the steepest slope of the field regardless of the fall, at other times they follow grade lines and extend from the head ditch in more or less curved lines across the field, Figure 8.

In preparing a field for this method it is first plowed and harrowed and then graded. Several good home-made implements are used to reduce the surface to an even, uniform grade. A convenient implement to make field laterals is shown in Figure 7. It consists of a lister plow, either fourteen or sixteen-inch, attached to a sulky frame and drawn by three horses. When the ditches extend down the steepest slope of the field they are located by eye, but when they are located on grade lines, as in Figure 8, some kind of a surveying instrument is frequently required to establish the grades. A suitable fall for these small channels is one-half to three-fourths inch to the rod.

The check method is illustrated in a general way in Figure 9. It consists in the division of the field into checks, or compartments, each having a comparatively level floor space surrounded by a low, flat levee and a bordering supply ditch.

The checks are made in one of two more or less distinct ways. These are known as the "rectangular," Figure 9, and the "contour." The boundaries of the former are straight, forming rectangles which are usually much longer in the direction of the least slope, while the boundaries of the latter conform to the natural slope of the land.

The field should first be carefully surveyed and the margins of the checks marked by a plow furrow or in some other way. The levees are formed by scrapers, which remove the earth from the high parts of the floor and deposit it on the levees. Leveling devices of various kinds are subsequently used to grade the floor and trim the low embankments. An essential feature in checking land is to arrange each tier of checks in such a way that each can be flooded from a supply ditch. Wooden gates in the ditch banks admit the required amount of water.

In all essential features the basin method does not differ from that just

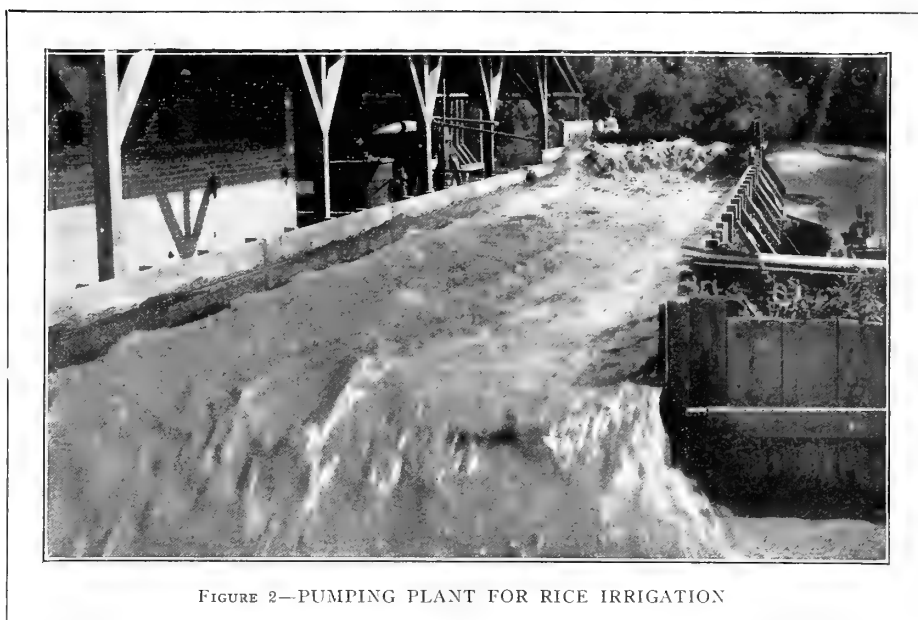


FIGURE 2—PUMPING PLANT FOR RICE IRRIGATION

described. The fact that basins are used in the irrigation of orchards and checks in the irrigation of alfalfa, and the further fact that basins are much smaller and last but for one season, have served to distinguish between them and to accord to each a separate place.

Orchards are prepared for irrigation by this method by forming ridges of the loose earth midway between the rows of trees in both directions in the manner shown in Figure 10. These ridges are made with ordinary walking plows by throwing up two furrows or else by a ridger. When the top soil is light and free from weeds only the ridger is required, but in more compact soils and on soils covered with weeds the surface should first be disked. This method is well adapted to the warmer portions of California, Texas, Arizona and New Mexico, where the winter irrigation of orchards is becoming a fixed practice. Water is then abundant and large quantities can be applied when the land is thus formed into small compartments.

One of the most common ways of fitting the surface to be flooded is to divide each field into narrow strips or "lands" by means of low, flat ridges of earth. These ridges extend from the head ditch at the upper margin of the field down the steepest slope to the bottom. When the slope is too steep they follow a diagonal course. In either case the field is divided into bands or borders, each of which is watered separately. Figure 11 shows a portion of the head ditch having three gates, through which water is flowing into as many borders. The tract is first plowed or disked and then laid out in narrow parallel strips by plow furrows, which mark the locations of the levees. On an average the levees are spaced about fifty feet apart and extend a distance of 800 or more feet. They are usually formed with a scraper, which is driven back and forth in a direction at right angles to that of the markings, and as each full scraper crosses a marking it is dumped and the surface is again skimmed over to collect earth for the next levee. The ridges or levees thus

formed are too steep and irregular and they are trimmed and flattened by suitable implements until their height is not more than eight to ten inches and the base is six to seven feet wide. The land between the levees is carefully leveled and graded so as to permit water to flow in a thin sheet from the top to the bottom of each border.

With the exception of flooding from field laterals, the furrow method is more generally employed than any other. In its main features it is extremely simple. There is only the making of a furrow in cultivated soil for the passage and absorption of a small stream of water. From so simple a beginning many modifications have been evolved, most of which pertain to devices employed to distribute water among the furrows.

The common practice among unskillful irrigators on poorly prepared fields results in an uneven wetting of the soil, waste of water and reduced yields. Before watering orchards or such crops as sugar beets, potatoes and corn furrows are made between the rows with a light plow or cultivator. Water is then admitted into the head ditch at the top of the rows, its surface is raised by checks to the required height and the furrows are supplied with water by making openings in the head ditch. The chief objection to this crude and inexpensive plan is the unequal distribution of water to the furrows.

A more even division of water among furrows can be made by using short tubes in the lower bank of the head ditch. These tubes are most frequently made of laths or slightly larger strips of boards, but may be made of cement, iron or tin. By means of check gates, spaced near or far apart according as the grade is steep or flat, the surface of water is kept up to the proper height, and the tubes are so placed that their upper surfaces will be on the same level and some little distance under water. Figure 12 shows the distribution of water from such boxes. In the Northwest, where lumber is cheap, wooden flumes with small openings on one side are



rapidly taking the place of earthen head ditches. These flumes vary in width from eight to twelve inches, and the openings are controlled by metal or wooden gates in the manner shown in Figure 13. Throughout the southern and central portions of California cement flumes and pipes of various kinds are quite generally used to distribute water to furrows. A common type of flume is shown in Figure 14. In the process of building, and before the cement hardens, small metal tubes are inserted on the side next to the orchard, the flow through each tube being regulated by a gate of the same material. When pipes are used a line is laid across the top of the tract to be watered at the proper depth below the surface, and at regular distances standpipes are inserted to bring the water to the surface, where it is divided between a number of furrows by special devices.

Where water is pumped from wells, and where it is conducted from gravity canals under pressure, a convenient way of irrigating certain crops is by means of surface pipes. These pipes are made at the factory into convenient lengths, usually ten feet, of various diameters, and of different weights and kinds of metal. When not in use they are stored in an outbuilding or shed and carted to the field which is in need of water. In the main feed pipe, which is laid underground across the top of the field to be watered, there are standpipes at regular intervals, and a length of the movable pipe is attached to the lowest standpipe, using heavy canvas hose to make the connection. To this length others are attached until a line extends on one side of the field to within a short distance of the bottom. When the water is turned on a section of canvas hose serves to distribute the water down the slope and as far on each side as the hose will reach. Several lengths of pipe are then removed and carried over to an adjoining strip. The hose is again attached and another block of land watered. In this manner an entire strip on one side of the field is watered, and the pipe is again strung out in such a way that the strip next to the first can be watered.

In 1909 the farmers of Louisiana, Texas and Arkansas received more than \$18,000,000 for their irrigated rice crop. The well drained, rich soil of that warm, humid region, when abundantly supplied with water at the proper time, is well adapted to the needs of this crop. Unlike most crops, rice must not only be

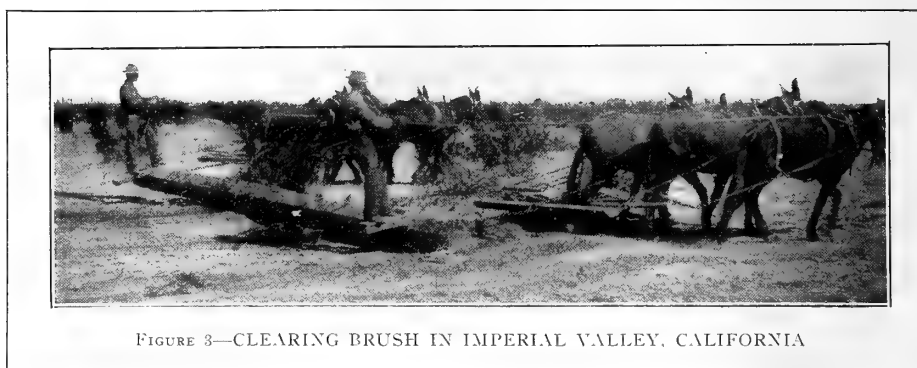


FIGURE 3—CLEARING BRUSH IN IMPERIAL VALLEY, CALIFORNIA

flooded, but the top soil must be kept either continuously moist or submerged for a considerable part of the time. In the river sections of Louisiana two systems of culture—the wet and the dry—are employed. In the wet method the fields are flooded and plowed in the water to a depth of two and one-half to four inches in April or early in May. The seed is sown broadcast and harrowed in, after which the water is turned off, and the rice speedily germinates. In the dry method the land is plowed, harrowed and seeded from the middle of March to the first of July in a manner similar to the treatment given other cereals. Under both methods a little water is turned on when the rice is four to six inches high. If the water is cold it must be used sparingly on early rice, while on late rice a sufficient depth of water must be maintained to prevent scalding. Unless the crop is attacked by insects the water, after being turned on, is kept on continuously until withdrawn previous to the harvest.

In the prairie districts of Louisiana, Texas and Arkansas, where over eighty-five per cent of the total yield of this country is grown, the fields are plowed two to three inches deep at any convenient time between the harvesting of one crop and the planting of the next. Unless the soil is very hard no irrigation is needed before seeding. The most common varieties are Honduras and Japan rice, the acreage in the former being about double that of the latter. Japan rice grows more slowly, requiring about fifteen days more time to mature. Advantage is taken of this to increase the length of the growing, as well as that of the irrigating season, in order that the largest possible acreage may be handled by a given number of laborers. The time of seeding extends from the middle of March to July. The Honduras rice is planted first, and there is usually sufficient rainfall to germinate the seed. In case irrigation water is needed to sprout the seed it should not be allowed to remain more than a few hours or it will cause the seed to rot. Water, as a rule, is not needed on the Japan rice, or again on the Honduras rice, until the plants are from four to six inches high. Water is at first used sparingly, but the surface is flooded when the rice attains a height of six to eight inches. As in the case of the river rice the fields are continuously flooded from this time until shortly before the crop is harvested.

In the river districts of Louisiana the water required is obtained by siphoning it over the levees from the river, or, in case of low water, from pools into which it has been pumped. In the prairie districts large canal systems, supplied by pumping plants, Figure 2, and irrigating extensive tracts are common. The pumping plants operate against heads ranging from ten to seventy feet, and are made of sufficient capacity to furnish seven to eight gallons per minute for each acre irrigated. One cubic foot of water per second would thus serve about sixty acres of land.

Modifications of the check method of land preparation prevail throughout the rice districts. In the past the levees were far apart, but later practice has fully demonstrated the advantages of having three to five contours in each foot of vertical elevation instead of only two, as was the former custom. This allows a corresponding reduction in the height of the levees and the size of the checks. The lesson which experience has taught in the rice fields of the Gulf States, as well as in the San Joaquin Valley of California, is that the low levee with a broad, evenly trimmed base is best, and presents the least obstruction to farm operations.

Stated generally, alfalfa is irrigated by flooding in the Rocky Mountain States, from furrows in the Northwest and in borders and checks in the Southwest and California. The amount of water, usually designated the "head," required for flooding varies from fifty to two hundred miner's inches. This quantity is conveyed to the highest point of the field in a supply ditch and is there divided among two or more field laterals, the number served depending on the total head. The least head for any one lateral is seldom less than forty inches. When water is admitted into a lateral it is checked at a point 100 feet or more below the place of entrance. These checks may be earth, coarse manure covered with earth on the up-stream face, canvas or wood. The effect of any one of these checks is to raise the water until it flows over the low places or through openings made with a shovel. This partial flooding and absorption by the soil is shown in Figure 8. Any excess water is caught up by the next lower lateral, and when the soil is thoroughly soaked to a depth of about twelve inches the check is either broken or removed to a point lower down and the flooding of the adjacent piece of land is

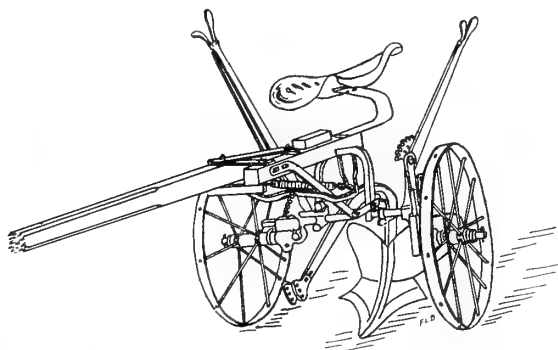


FIGURE 7—LATERAL DITCH PLOW



begun. One man can water from about two to five acres in twelve hours.

The fine soils found in parts of the Northwest have a tendency to run together and form a crust after water is spread over the surface. In order to prevent puddling and baking, which injure crops, the soil is moistened from furrows. The spacing of the furrows varies from twelve to forty-eight inches, depending on the readiness with which the water moistens the dry earth on each side of the furrow. The furrower shown in Figure 15 or some modification of this implement is used to make the furrows. Water is turned into these from head ditches, usually through spouts or tubes, Figure 12. When a field is properly prepared the task of irrigating by this method is easy. In sandy loam, and with furrows 500 to 1,000 feet long, the water is allowed to run for about two days. At first a larger head is used, but after the bottom of each furrow is wet a smaller stream will suffice.

In irrigating alfalfa in checks, Figure 9, large heads are the rule. In the Modesto and Turlock irrigation districts of California ten or more cubic feet per second is commonly used. With this head three or four checks, each averaging about three-fourths of an acre in extent, are flooded at one time, and in ten hours it is possible to irrigate sixteen acres to an average depth of six inches. With such facilities for distributing and controlling water the wetting of the soil becomes an easy and simple task.

In irrigating alfalfa in borders in the Yuma Valley, Arizona, a head of about four cubic feet per second is divided between three or four borders, and the time required for the thin sheet of water to traverse a field forty rods long depends on the slope, soil, crop and thoroughness of irrigation desired. The usual time is one hour.

Grain occupies an important place in irrigated farming. Such crops as alfalfa, beets, potatoes and fruit give much greater returns, but grain growing must needs be practiced to round out the requirements of most diversified farms

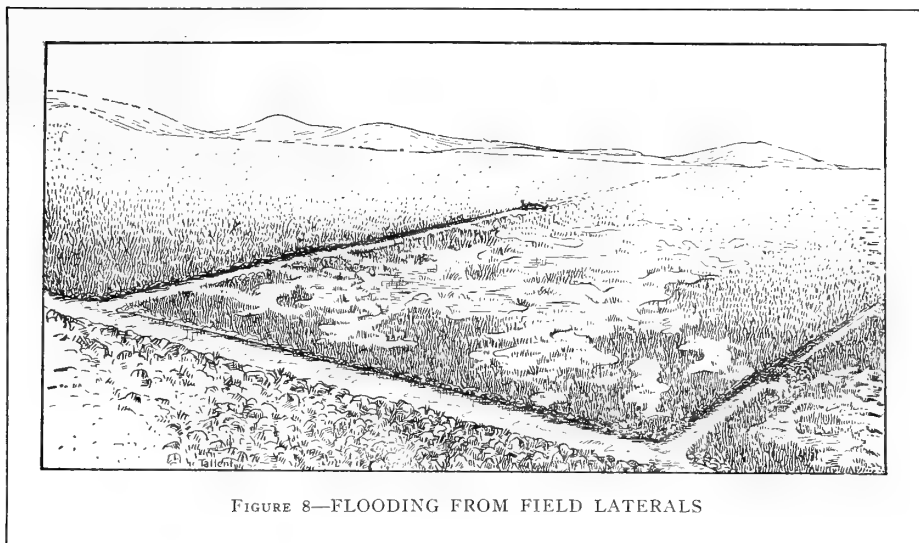


FIGURE 8—FLOODING FROM FIELD LATERALS

under irrigation. To the new settler with little means it brings in quick returns; it is one of the best preparatory crops to sow on raw land, and it fits into the ordinary crop rotation of the West made up of grain, alfalfa and sugar beets or potatoes.

Grains of all kinds are irrigated mostly by the flooding method, Figure 8, but borders and furrows are also used to a limited extent. The process of flooding grain fields from field laterals is very much the same as that for alfalfa, except that the laterals are spaced closer. Less care is likewise taken in forming these channels, since they are not intended to last beyond one irrigating season. After the last watering, and before the grain is ready to harvest, the field ditches are filled in so as not to interfere with the reaper.

In the Yakima Valley in Washington grain is irrigated from furrows spaced twenty-four to thirty inches apart, and in the Imperial Valley in California it is flooded in borders about fifty feet in width, and often a quarter of a mile long.

The low duty of water on grain land is largely due to the newness of the ground and the rough condition of the surface. Results of measurements made

in different states of the West show that large quantities of water, often exceeding six acre feet per acre, are frequently applied to grain fields. It is apparent from the low or average yields obtained that the greater part of the water is wasted. Under skillful use more than two acre feet per acre is seldom needed.

The growing of sugar beets under irrigation is highly profitable when a heavy tonnage can be secured. To accomplish this desirable end alfalfa fields are frequently plowed under to make way for sugar beets, and when no rotation is practiced the best soil is usually selected for this crop. Perhaps the best soil for sugar beets is a well drained clay loam, with just enough sand or silt in its composition to work freely. Deep plowing is essential, and as a rule it pays to subsoil. The two operations loosen the soil to a depth of fourteen to sixteen inches. Outside of California sugar beets are irrigated by furrows. These start from a head ditch running across the upper margin of the field and extend down the steepest slope, or diagonally if the slope be too great. The furrower shown in Figure 15 may be used to form the furrows, provided the runners are spaced to correspond with the beet rows, and also provided that the soil is loose and free. Shovels attached to cultivators are, however, the most convenient implements for this purpose. It is well nigh impossible to distribute water evenly in long furrows, and for this reason their length should not exceed a general average of 350 feet. Fields that are 600 to 1,000 feet long should be provided with at least two head ditches, the lower one acting as a drainage channel for the upper half of the field and a supply ditch for the lower half.

Deep plowing, thorough cultivation, leveling, grading and furrowing should all be done with skill and care, but none of these is so difficult to manage as an even distribution of the water among the furrows. In perhaps ninety per cent of all beet irrigation too much water is forced into some furrows, resulting in flooding parts of the crop, which invariably suffers in consequence. Some device like those shown in Figures 12, 13 and 14 should be used to regulate the quan-

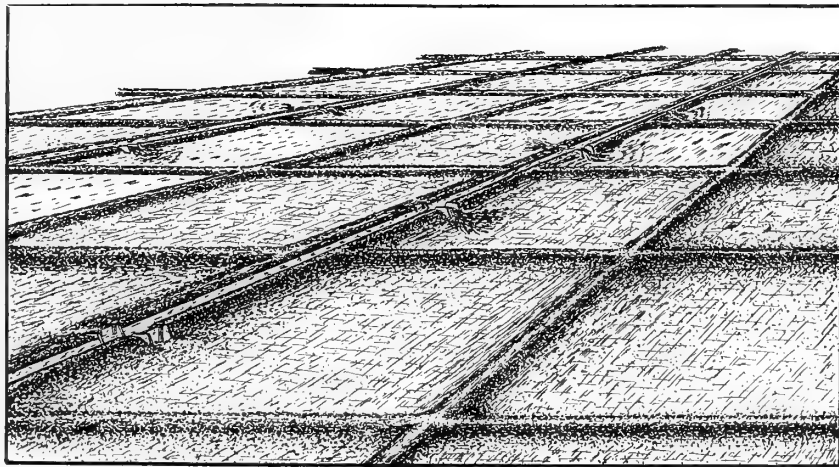


FIGURE 9—CHECK METHOD OF IRRIGATION

tity of water entering each furrow. Each small stream should then be allowed to run until the absorption which goes on in its passage down the furrow has sufficiently moistened the soil around the roots.

As regards the right time to irrigate and the proper quantity to apply the best guide is a close observance of the crop itself. Sufficient moisture should be given to the soil to enable the beets to maintain a steady, vigorous growth. When water is applied too early it produces leaves at the expense of roots, and too late waterings cause the plants to mature before they have their growth. A depth of four to five inches over the surface is usually applied at each watering, and the number of applications ranges from two to four in a season, the ground being cultivated as soon after each irrigation as practicable.

The growing of potatoes in a commercial way in some of the arid states is rapidly becoming an important industry. Its success is largely due to an interchange of other irrigated crops. A common rotation on the more fertile bench soils of Greeley, Colorado, consists of grain as a nurse crop to alfalfa the first season, then two years of alfalfa, followed by two years of potatoes. In the San Luis Valley of Colorado the common field pea is substituted for alfalfa, the most common rotation being one to two years of peas, one to two years of potatoes, followed by one to two years of grain.

The rotation of crops in potato growing has an important bearing on the way in which the fields are prepared for irrigation and the manner of applying water. Neither the check nor the basin method is suitable, since potatoes cannot well be flooded. The choice lies between furrows and flooding from field laterals, since it is easy to change from the flooding method followed in alfalfa, peas or grain to the furrow method followed in potatoes. In furrow irrigation the size of the field, the slope and the character of the soil cause the length of the furrow to vary from a minimum of 200 feet to a maximum of 1,400 feet. From the standpoint of the irrigator it is not advisable to increase the length beyond 660 feet. Sometimes the furrows are not more than six inches deep, at other times they are twelve inches deep. A common practice is to have the bottom of the furrows about twelve inches below the crown of the plant. In most other respects the irrigation of potatoes does not differ from that of sugar beets.

Gently sloping land is preferred for irrigated orchards. A fall of ten to twenty feet to the mile insures good drainage, and the soil is not eroded by small streams of water. On very flat slopes the excess water from irrigation frequently has to be removed by artificial means, and on very deep slopes the difficulties of applying water are greater.

Furrow and basin irrigation are the usual methods employed, but the former is more common. In setting out land for commercial orchards a section is usually divided first into forty-acre divisions and then into ten-acre tracts. The

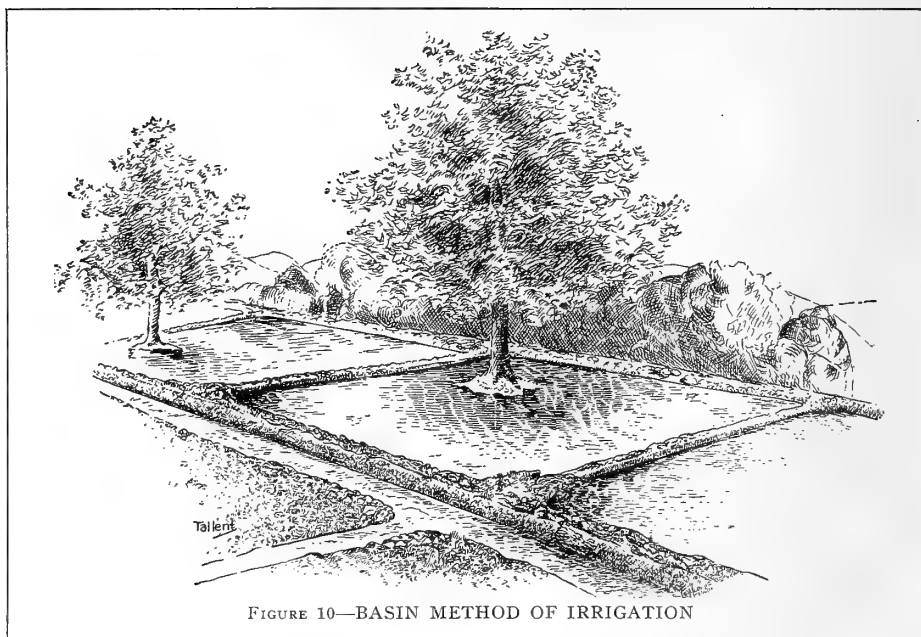


FIGURE 10—BASIN METHOD OF IRRIGATION

lateral ditches supply the divisions, and individual owners control the respective tracts. When the width of driveways is deducted the length of a tract occupied by trees is seldom more than 600 feet. This distance governs the length of the furrows. The watering of orchard trees during the first season after transplanting is most commonly done through two furrows spaced four feet on each side of the tree. As the roots expand more furrows are added, and about the time the tree begins to bear the entire space between the rows is moistened, the number of furrows necessary to accomplish this depending on the soil, depth of furrow, cultivation, etc. Evaporation is less from furrow than from surface irrigation, and deep furrows conserve more water than shallow furrows. In citrus orchards, where water is valuable, a depth of furrow of eight inches is common.

In conducting a supply of water along the upper margin of an orchard and in distributing the flow evenly among a large number of furrows, various plans have been adopted. Although the earthen ditch is still common it is no longer regarded with favor. Wooden spouts, Figure 12, or short lengths of pipe inserted in the lower bank of the feed ditch are cheap and fairly effective. Wooden flumes, Figure 13, with auger holes about one inch in diameter spaced every four feet are quite effective, but the wood soon deteriorates, and in time decays. The cement flume shown in Figure 14 overcomes this objection, but both interfere with the free use of teams. For this and other reasons many orchardists prefer to conduct the water in a pipe and bring it to the surface through a short standpipe located at the head of each row of trees. This system is shown in part in Figure 16. Each standpipe, through the small openings made in its shell slightly above the ground surface, can supply all the furrows belonging to any one row of trees without interfering to any appreciable extent with the free passage of teams.

The quantity of water that is applied to orchards during an irrigation season runs all the way from one to five feet. Where more than three feet in depth is used it is pretty safe to conclude\* that the excess is wasted. In districts of scanty rainfall and heavy evaporation, the most profitable crops are produced with the use of twenty to thirty inches in depth over the surface throughout the season. One of the most productive apple orchards in the vicinity of Wenatchee, Washington, is irrigated five times between the middle of May and the last week in September, from four to five inches in depth being applied at each watering. In Southern California it requires fully three inches per month in depth over the surface, including both rain and ditch water, to keep citrus trees in a good condition. For the past seven years the amount of irrigation water which has been applied to the lands under a canal at Riverside, California, which serves about 9,000 acres, has averaged twenty-seven and three-quarter inches in depth over the surface. The average rainfall of this locality for the seven years was ten and one-half inches, thus making the total thirty-eight and one-quarter inches, or a trifle more than three inches per month.

In the introductory paragraph of this article it was estimated that the water now diverted from stream channels and other sources in excess of that required to produce satisfactory yields is sufficient to irrigate 7,000,000 acres of land. Very little of this excessive use is deliberate waste. A large part of the water taken from natural streams is lost before it reaches the fields of the farmers and another large part of it results from the failure to adapt methods to soil and crop conditions and to the character of the water supply. In deciding upon the best method for given conditions all these factors must be considered, and the crop and the soil should be examined often to see whether the water is being properly distributed to the plant roots.

# MOST PROFITABLE USE OF OUR WATER SUPPLY

BY S. O. JAYNE, IRRIGATION MANAGER U. S. DEPARTMENT OF AGRICULTURE

A RECENT PUBLICATION issued by the State Bureau of Statistics says: "It is quite within the range of possibilities that the products of the irrigated lands of Washington will in time exceed in annual value the present output from our combined timber and cereal producing areas." According to the same authority the forest and grain products aggregate not less than \$100,000,000 in value each year. To expect so much from irrigated lands may seem very optimistic, but I do not consider it unreasonable. But whether or not the products of irrigation ever reach the figure given there can be no question that the future development of agriculture in the State of Washington will depend as much, or more, upon a judicious use of our water supply than upon any other factor.

There are millions of acres of land in Eastern Washington most admirably adapted to irrigation farming so far as soil and climatic conditions are concerned; in fact there is scarcely an acre of ground or a farm which would not, with the skillful use of water, yield much larger and more profitable crops than can be grown by dry farming methods or by depending solely on the natural precipitation. And not all of the land adapted to irrigation is in the eastern part of the state. Over west of the mountains there are many districts of considerable extent which would be wonderfully benefited through irrigation, though the fact is only beginning to be realized.

We have at the present time less than 500,000 acres under ditch, and I believe less than 300,000 acres actually irrigated. It is conservatively estimated that we have four times the former figure, or 2,000,000 acres irrigable, but as to what part of this or how much more will eventually be irrigated no man knows. But certain we are of this, that our available land many times exceeds the amount of available water, and we know that the greater the area that our available water can be made to efficiently irrigate the greater will be the wealth and general benefit to the state.

With this knowledge, then, it is pertinent and timely to determine whether existing methods and agencies affecting the use of the water supply are such as will guarantee the maximum duty. If present conditions are not favorable to best use along what lines and in what way can improvement be brought about?

To discuss in detail all the many and varied influences bearing upon the subject is, however, not permissible here, and an attempt will be made to consider only a few of the most important.

In the disposition of public resources of value, such as our water supply, there should be in the beginning adequate laws or provisions to regulate its appropriation and insure its proper use. Not to maintain such supervision is like giving a large family of small children free access to the sugar barrel.

The sugar would disappear very rapidly. There would be abundant evidence of use, but no record as to how or where. There would be waste, over-indulgence, internal ills, doctor bills, and doubtless bickerings over possession of the biggest lumps. Now, the people of this state have for the past thirty-five or forty years been running to Mother Washington's sugar barrel, or, more literally, to the water barrel, with practically no restraint beyond the individual will. Appropriations have been made out of all proportion to the physical needs; some has been used, much has been wasted. There has been over-indulgence, and the internal ills are evidenced by the breaking out of alkali. Over on the reservation we have a doctor bill of \$150,000 for a capital operation in the way of an eighteen-mile drainage ditch; at Richland another for \$40,000; in the Moxee, on Nob Hill and at Sunnyside already large sums have gone to pay the price of folly and misuse, and the end is not yet. At times of shortage there have been the to be expected bickerings over possession of the biggest share, and expensive litigation is still going on. Official records of use are almost entirely lacking and of little value. Outside of the Yakima Valley perhaps not one ditch in a hundred has ever been actually measured, and no one knows how much

water is being used, or with what efficiency.

State supervision over the character of irrigation development there is practically none at all. Anyone, be he so inclined, may place a few miles of cheap pipe on a piece of cheap land, connect a cheap pumping plant, print an expensive book showing beautiful and profitable orchards and proceed to sell out to innocent Easterners for whatever price his conscience will stand for, and there is no authority to say him nay. It is legitimate business. But it is not fair to the purchaser, to the honest promoter, nor to the state. Such a condition of affairs is in every way inimical to best use of the water supply, and it certainly is time for Mother Washington to assert her prerogatives, lay down some better law and assume her responsibilities in the matter.

One of the prevalent sources of waste throughout the state has been, and still is, the seepage from poorly constructed ditches and canals. To this cause, in a measure, also is due the waterlogged condition of much of the land now requiring drainage. The magnitude of the annual loss occurring in this way is not generally known or appreciated. Measurements made by the irrigation investigations of the Department of Agriculture during the past few years on a great many canals show an average loss on main canals of about one per cent for each mile that water is carried; on laterals the losses amount to eleven or twelve per cent, while on some California canals the loss in a single mile is sixty-four per cent, and we have some that can probably leak as fast as any in California.

On one of the larger canals at the lower end of the Yakima Valley, in 1906, there was found to be a loss of twenty-five and two-tenths per cent in a distance of less than nine miles, and the total amount lost from the main canal was estimated at over fifty per cent of the water taken in at the head. One of the Spokane Valley canals showed a loss in 1907 of forty per cent in about three miles. The Sunnyside canal, the largest in the state, constructed almost entirely in earth of fine texture, loses, according to estimates, fifteen per cent in the main channel and an equal amount in the lateral system, making a total loss of thirty per cent of the water diverted from the river.

The waste from the Sunnyside canal from this cause is less than the average. If all the canals of the valley or of the state be considered it is doubtful if more than fifty per cent of the water diverted from the streams ever reaches the fields. But assume that the Sunnyside canal is representative and that thirty per cent is a fair estimate of the total loss in transit, (the total average diversion from the Yakima River and tributaries during August, 1905, amounted to approximately 2,000 cubic feet per second,) then on the basis of our assumption the waste from seepage would be 600

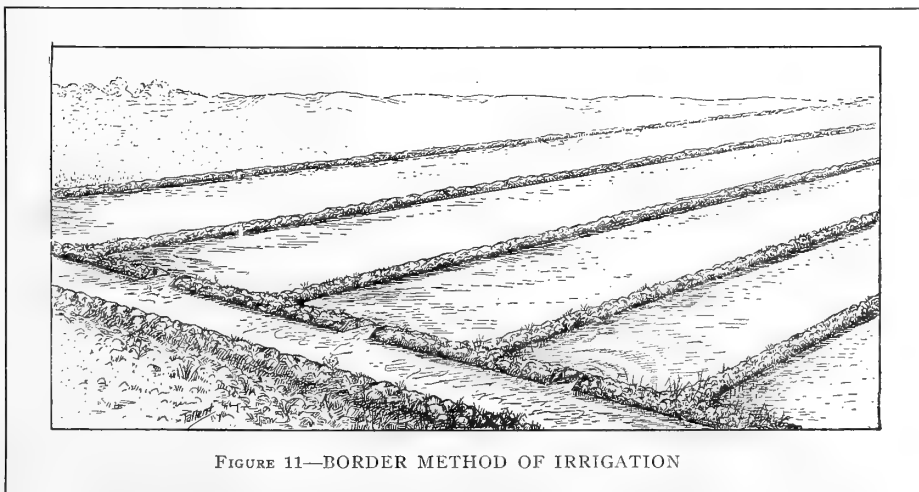


FIGURE 11—BORDER METHOD OF IRRIGATION

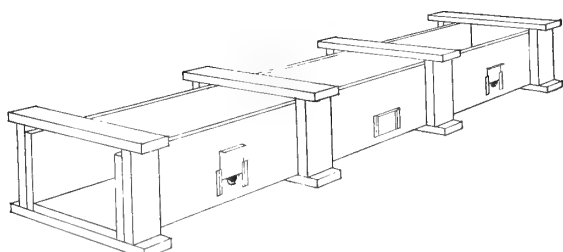


FIGURE 13—HEAD FLUME WITH OPENINGS TO SUPPLY WATER TO FURROWS

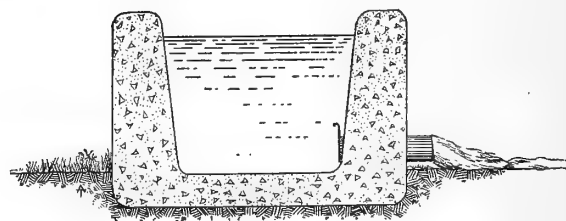


FIGURE 14—SECTION OF CEMENT HEAD FLUME

cubic feet per second, water enough at the rate of a second foot per 160 acres to supply 96,000 acres of land, or nearly twice as much as was watered by the Sunnyside canal in 1910.

With water rights valued at \$100 per acre, which is materially less than many have been sold for in different parts of the state, this water would be worth \$9,600,000. This amount of land in its raw state, with water right, would at present prices be worth \$20,000,000 to \$35,000,000. The foregoing is illustrative of conditions in many parts of the state, and should be sufficient argument in favor of better construction, which will be necessary before the most efficient use of our water supply can be realized.

At the time most of the canals of this valley were built no better construction, as a rule, was possible or justified by existing conditions. The prime object was to get water on the land. So long as there was an abundance in the stream a loss of fifty per cent or more by seepage from the ditches was a matter of small concern, and to have considered structures of masonry or concrete, or lining canals with cement at \$10 per barrel would have been ridiculous. The history of this valley has been repeated in most of the other districts, and the pioneers in canal building and irrigation did well and deserve great credit for what they did. But conditions now are not what they were twenty-five years ago, or even five years ago. The general development in this and other of our irrigated districts has been marvelously rapid—almost beyond our power to realize. The old leaky and temporary wooden flumes and other structures have served their purpose, and have about had their day.

We are now, I believe, in the beginning of a new epoch in irrigation development, one in which the methods and practices of the earlier days will have little part. We are ready to build for the ages, and a start has been made. Some of the works that have gone in during the past five years should be in service a thousand years from now. At Clarkston and some other places the open ditches have been abandoned and pipe lines substituted at great expense, thus eliminating seepage losses altogether. Several of the irrigation companies have begun to line their canals with concrete, and more of it will be done each year until finally a large percentage of the irrigation ditches all over the state will doubtless be rendered water tight in this way and the present waste from seepage stopped or reduced

to a minimum. Besides the saving of water there would be other important benefits and objects in lining the channels. The danger from disastrous breaks would be reduced, less inspection and fewer patrolmen would be required, the common trouble and expense due to the growth and necessary removal of aquatic plants would be eliminated and the growth of clover, willows, thistles and other noxious weeds, usually found to be a nuisance along canal banks, would be largely prevented; all tending to materially reduce the cost of maintenance and operation.

In building the more important systems, such as the Yakima high line, the Horse Heaven canal and others of this class, concrete lining will be generally considered as a necessity, but improvement of existing canals is going to be a matter more difficult of accomplishment, especially where all the land under them is developed and there is no opportunity for the owners to make use of water on other land. Though the lining would save thirty to fifty per cent of the water diverted from the streams and make it available for other lands the owners will not voluntarily go to the expense of making the improvement, and there is now no means of compelling them. Future legislation will doubtless prevent the acquirement of rights so large that the appropriator can afford to waste it in transit, and it would seem only fair to the state to make provision also whereby water which has already been acquired materially in excess of a reasonable need can be condemned, and used where it will do most good.

In many places a much better use of water would obtain by abandoning small parallel ditches and combining the flow of all in one well built canal, under a single management. By improvement, also, in systems of ditch management great savings of water are possible. The practice, for instance, of measuring all water to consumers, as has been done on the Prosser canal and a few others for several years, would, if generally adopted, result in a much more economical use.

While the waste of water from canals and distribution ditches, everywhere apparent, must be checked before best use is attained there are other ways of misuse, less evident but equally great, equally in need of correction and much more difficult to control. These are associated with the application of the water to the land, and consist principally in surface run-off, evaporation from the surface of the soil and deep percolation into the subsoil. The first is due in part

to the steepness of much of the land irrigated and largely to careless handling of the water and lack of attention; the excessive evaporation results chiefly from lack of cultivation; percolation losses, the most serious of the three and most difficult to appreciate and control, are occasioned generally by the combination of shallow or very porous soil and subsoil, and a lack of skill on the part of the irrigator.

Much has been said and written as to methods of reducing these losses, but the degree of success will in all cases depend upon many variable conditions, and into the problem the personal equation will always enter as one of the most important factors. We may line the ditches or pipe the water to the land, and know when we have reached the limit of economy in conveyance, but who can say when we have reached the limit as to its use on the farm.

This brings us to the question that is ever being asked and never answered. How much water is required, maybe for alfalfa, for potatoes, for garden truck; but here most often it is: "How much water is required for the commercial orchard?" This question as to the actual water requirements of crops, or rather as to the best possible use of the water in their production, is the most important and at the same time the most complicated and difficult problem that we have to solve in connection with irrigation. The actual amount of water that enters into the growth of a plant, or is transpired in the production of one pound of dry matter, is nearly constant, and may be determined with a fair degree of accuracy, as has been done in the case of many of our farm crops, but under field conditions some additional allowance must be made to provide for other necessary losses, which vary widely with differences of soil, climate and tillage.

"An inch to the acre" was the rule in the early days, which amount, continuous flow for seven months, is equivalent to a depth over the surface of nearly ten feet. Experience and better farming have demonstrated fully that for most conditions this was an excessive use, and contracts made in more recent years have stipulated much smaller quantities. A second foot per 160 acres continuous flow for a period of seven months, amounting to thirty-two inches in depth, has been a common allowance specified by many irrigation companies, while some few do not give so much, and one at least limits the use to six inches for the irrigation season.



But water contracts are but arbitrary assumptions as to the requirements of crops, and where we find that in one district thirty-six to forty inches is the assumed duty, according to contracts, while in another a few miles away, with conditions still more arid, it is placed at eighteen inches for the season, it is safe to assume that someone's assumptions are inaccurate. If eighteen inches is sufficient, then what a lack of economy there is in supplying thirty-six to forty; while if thirty-six inches of water is necessary, those who buy land and expect to succeed with eighteen inches are doomed to disappointment. With water abundant, as we have known it in the past, the tendency has been common to overestimate the quantity needed and to be ultra-liberal in allotting the supply, but with scarcity or the necessity of pumping it at great cost in the none too distant future, there is apt to be a stronger tendency in the opposite direction. Both extremes are opposed to best use, and should be equally guarded against.

As water contracts and court decrees are not to be considered reliable evidence in judging the amount of water needed, we must have something better as a basis of determination. The only safe guide is accurate scientific information which comes from actual practice. It is not wise to assume a duty appreciably higher than has already been attained. For example, if no one has ever grown a good commercial orchard on less than eighteen inches of water, to attempt it with half or two-thirds of this amount is nothing more than an experiment, and to invest large capital on such an expectation is a gamble. Let us see, then, what has been done.

Records of the water used by the Sunnyside canal system have been kept since 1898. The general duty that year for all lands was 11.4 feet in depth over the surface. In 1906 the general duty was shown to be 6.5 feet, and during the season of 1910 the depth of water received by the land was three feet. The general duty in the Moxee Valley under the Selah-Moxee canal in 1906 was one second foot per 104 acres irrigated, or a depth of 3.48 feet. That same season water was used on the Kennewick garden tracts to a depth of 6.31 feet.

Farmers' bulletin No. 404 of the United States Department of Agriculture states that the most reliable and in many ways the most valuable records pertaining to duty of water on orchards have been obtained from the companies of Riverside County, California. Here more or less irrigation water is used every month

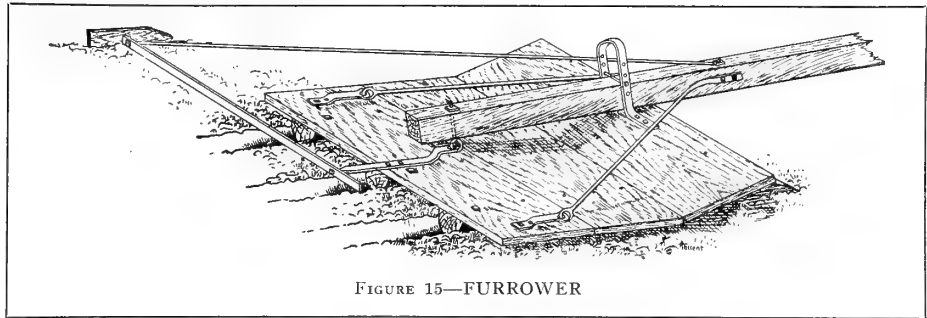


FIGURE 15—FURROWER

of the year. The average duty for the Riverside Water Company for a period of seven years was 3.3 acre feet, including rainfall. Dr. Fortier, the author of this bulletin, states that with the same degree of economy here in Washington twenty per cent less, or thirty-two inches, should be sufficient. The lands irrigated by the California company just mentioned included 6,000 acres of orange orchard and 3,000 acres of alfalfa. Professor E. J. Wickson, in farmers' bulletin No. 116, states that evergreen fruit trees, including citrus fruits, require about fifty per cent more water than deciduous fruit trees under same conditions, and that with adequate depth and retentiveness of soil twenty inches of rainfall, if duly conserved by good cultivation, may render irrigation unnecessary for deep-rooting deciduous fruits. In the eastern part of this state we find commercial orchards being grown without irrigation where the annual precipitation is twenty-three inches, about one-fifth of which runs off, leaving eighteen inches for the trees. But this amount is insufficient to give yields comparable with those from irrigated orchards, and we know that additional water would be beneficial.

The water on a twenty-acre apple orchard at Wenatchee was measured during the season of 1908, showing that a depth of 23.04 inches was applied between May 13 and September 23. On the same orchard in 1910 twenty-seven inches of water was used, the first irrigation being May 30 and the last September 12. To this amount in each year should be added the rainfall to the extent of possibly six inches, making a total of twenty-nine inches for 1908 and thirty-three inches for 1910. The trees were seven years old in 1908 and bore a heavy crop that year, another in 1909 and another last year. The orchard is one of the best cared for as well as one of the best producers of the Wenatchee district. The irrigation was done with more than the ordinary intelligence and care, but the soil texture is rather coarse and the

water-holding capacity low, thus being favorable to large percolation losses into the subsoil. Undoubtedly a considerable saving in water would have been possible had the furrows used been only 330 feet long, instead of twice that length.

Another Wenatchee orchard of fifty acres, including apples, peaches, cherries and other fruits, used in 1908, according to measurements, something over sixteen inches, and in 1910 17.5 inches, rainfall not included. The soil here was perhaps somewhat heavier than in the former case, but the furrows used were twice as long, and besides the run-off was considerable. Part of the orchard, however, was not in bearing, and none of it so uniformly good as the other example cited. The records of one of the Spokane Valley companies show that on that system a depth of 14.7 inches was applied in 1905, 19.2 inches in 1906, 22.8 inches in 1907, and 17 inches in 1910, the rainfall in addition averaging about twenty inches per year.

So we have some data at last as to what is actually being used by a few, but what everybody uses ought to be known and on record. However, even if we did know the exact amount used annually on every single orchard, on every alfalfa field, on every potato patch throughout the entire state, it would still be a legitimate question to ask how much is best. It would be well for every irrigator to first determine how much is used, and then how much this can be economically reduced.

If we limit the use too much, smaller yields will result, but this might be possible or even necessary to best use, for a maximum yield per unit of area does not always imply most economical use of the water, as for instance, in one Utah experiment twenty inches of water produced a yield of 446 bushels of potatoes, while increasing the water to forty inches gave 523 bushels. It was evidently not best use to apply the second twenty inches just to get the additional seventy-seven bushels, when it could have been used on another piece of ground to produce 446 bushels, or, in other words, it would have been better to have had every acre in that section yielding profitable crops rather than only half of the acreage yielding maximum crops.

The time will never come when we can arbitrarily fix the duty of water for orchards or other crops and expect it to apply everywhere. It is possible, however, to take given conditions and determine the water requirements within reasonable limits, present knowledge indicating that on deep, fine soil, such as

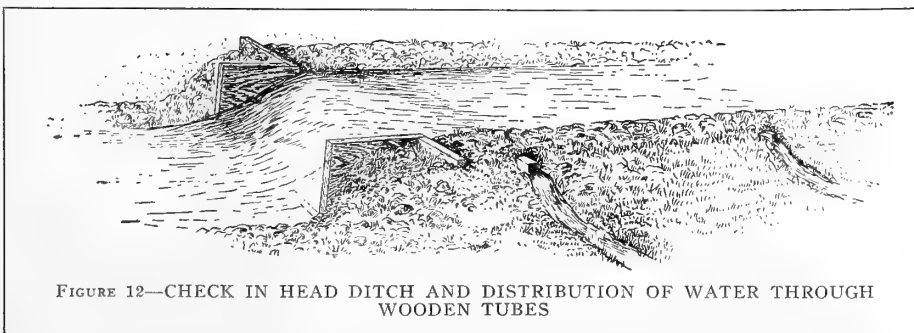


FIGURE 12—CHECK IN HEAD DITCH AND DISTRIBUTION OF WATER THROUGH WOODEN TUBES



is found more or less generally throughout the Yakima Valley, for instance above the Sunnyside canal, twenty-four inches of irrigation water, or possibly less, will produce orchards, assuming that waste is reduced to a minimum by careful application and thorough cultivation.

This type of soil will hold about 23 per cent of moisture, or nineteen inches in the first four feet. Where it is eight, ten or possibly fifty feet deep, as is not uncommon, there is no excuse for waste water by percolation into the subsoil, for trees are able to get moisture from the depth of eight to ten feet. With the same type and depth of soil at Wenatchee or some other part of the state having a greater rainfall, less irrigation water would be necessary.

Now, if the soil is but eighteen inches to three feet deep, as we will find it in some sections, or coarser in texture, it is impossible to use water with the same degree of economy as on the fine, deep soils, for the reason that a larger percentage is lost by percolation into the subsoil, and more by evaporation occasioned by the greater frequency of irrigations necessary. On soils of this kind humus should be added by every possible means to increase the water-holding capacity, if for no other reason, and if manure is not available, this means cover crops in the orchard.

In fact, since the practice of growing cover crops is coming to be so generally adopted, its influence upon the water requirements of orchards must be considered, for the two crops cannot be grown on the same ground at the same time without requiring more water than for one. To grow one ton of clover hay per acre about five inches of water is required, allowing nothing for any loss by percolation or run-off; alfalfa needs about the same. So if either clover or alfalfa is to be grown with the trees, five inches or more per acre of irrigation water will have to be added for each ton of dry matter produced. In the light of present experience it is unwise not to make provision for growing such crops to some extent at least in connection with every orchard scheme.

There are other matters bearing on the question of best use that have as yet received scarcely any or perhaps no consideration whatever. Bulletin 101 of the Oregon Agricultural College experiment station says: "It is not sufficient merely to obtain fruit of a certain size, but such questions as the relation of irrigation to color, flavor and shipping qualities of the fruit, the action of the water on the leaf, twig and bud, and the action of the water on the different types of soil, must be considered." Different kinds of fruits, we know, too, require varying amounts of water, even different varieties of the same species may not respond uniformly to like irrigation. It is said that the Spitzenberg apple, for instance, if kept too moist will be inclined to go too much to wood growth, and will not set fruit spurs without summer pruning.

The time of applying water, too, in the production of fruits may have as much influence on yield and quality of the crop

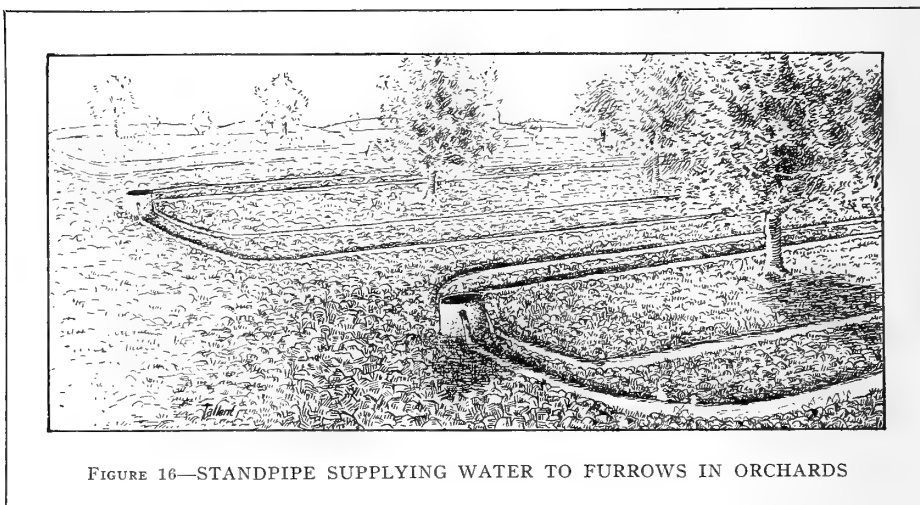


FIGURE 16—STANDPIPE SUPPLYING WATER TO FURROWS IN ORCHARDS

as does the amount applied. It has been demonstrated that in growing peaches heavy irrigation early in the season, followed by a more moderate or light use of water later, produces strong wood growth in the tree, and a peach with large stone and comparatively little flesh, while light early irrigation, followed by a copious use later, gives less wood growth and a peach with stone much smaller in proportion to the fleshy part. The flavor and keeping quality of the latter will,

however, be inferior to peaches grown by the opposite method.

We must conclude that the problem of how to make the best use of our irrigation water is one of great breadth and depth, involving many things in its solution. The attainment of best use will depend on how well we as citizens practice what we already know to be right use, and to a large extent also on knowledge yet to be acquired, for there is yet much to learn.

## FROM OUR APPECIATIVE SOUTHERN SUBSCRIBERS

**Y**OUR instructive and beautiful "Better Fruit" reaches us away down here in the Piedmont region of Georgia, where conditions are so entirely different from your section; yet, we think, in many respects "the fruit section of U. S." Whilst the apple and the peach have been growing here for over 100 years—as the Cherokee Indians had planted quite a number of orchards and had been our first fruit men of the north-east of Georgia.

The early settlers, in 1824 to 1840, brought in fruit trees from their home section and planted trees until today these veritable monarchs of the apple and peach stand as curiosities. We have apple trees three feet in diameter, forty to fifty feet high and producing forty to seventy-five tons of apples. An old peach tree on my farm is now forty years old, and the natives say fruit has been gathered from it for nearly its entire life, and never a flat failure.

A cherry tree eighteen inches in diameter sends bushels of fine cherries to market at Atlanta yearly, netting the owner \$40 to \$70.

Twenty-six different varieties, including all the leading varieties of berries, ripen and pay well here. Sixteen different kinds of nuts, including the paper-shell pecan and English walnut. Yearly more and better varieties of fruit are being planted, for our country is only eight of ten years old as far as commercial fruit industry is concerned—one might say a recent discovery. A few energetic people have literally taken hold and shaken up this section, buying some 10,000 acres, and have about half

planted in peach and apple orchards already shipping 500 cars annually.

Our peach orchards commence to bear at two or three years of age after planting, usually paying for themselves in three years. Apple orchards, mostly young, are paying from \$200 to \$500 per acre net; larger income when older. Our market lies right at our door, netting \$1 to \$2 per ton f. o. b. Cornelia.

I sent thirty-three different varieties of apples to the government pomologist. He did not know half of them—so many new varieties seem indigenous to this section—some of them superior to the Jonathan and Baldwin.

The rainfall is sixty-five inches annually, plenty of cheap white labor, and Habersham County, of which Cornelia is the center of the fruit belt, is, according to the U. S. census of 1890, the healthiest county in the U. S.

We would be glad, Mr. Editor, to show you our section, where heaven supplies the perfect climate for fruit.

California is a wonderful state, famous for its generosity and its hospitality. Citizens of San Francisco subscribed for this exposition \$7,500,000, \$4,000,000 of which was raised in two hours. The State Legislature voted \$10,000,000 more. This means that California will put up \$17,500,000 for this exposition, which will make it the greatest and grandest exposition ever held in the world. The entire Pacific slope, including the Northwest, should support San Francisco in this exposition in every way possible for the great good and benefit which will come out of it for the entire Pacific slope and the Northwest.

# ROOT DISEASES CAUSED BY ARMILLARIA MOLLEA

BY W. H. LAWRENCE, WESTERN WASHINGTON EXPERIMENT STATION, PUYALLUP, WASHINGTON

**D**URING the past three years a large number of inquiries have been received concerning the death of individual fruit trees among many apparently healthy ones, also groups or hills of bush and other small fruits. The examination of many of these dead or dying plants has revealed, in many instances, the presence of dark colored, cord-like bodies (rhizomorphs) on the stems and roots. After noting the nature of the injury caused by these rhizomorphs in numerous plants of various sorts, and by comparing the rhizomorphs with those of *Armillaria mellea* collected by Piper and Fletcher in Clarke County, and the rhizomorphs of the same species of toadstool collected by the writer in New York, the fungus was concluded to be a form of *Armillaria mellea*. At a later date a few mature toadstools were collected. By comparing these specimens with the illustrations and descriptions of *Armillaria mellea* and with *Armillaria mellea bulbosa* by the above mentioned authors the writer is of the opinion that at least four forms of *Armillaria mellea* exist in this state. Under various conditions all of these forms are more or less parasitic, and are the cause of numerous root diseases.

It is impracticable to separate the four forms into different varieties, since the botanical differences are so indistinct and variable that almost any one form would do equally well for a type specimen. The four forms mentioned include the two discussed in the above cited bulletin. The other forms occur in the Puget Sound country. One variety is delicate, small, light brown, bearing rather slender but very promiscuously branched and somewhat flattened dirty white to light brown rhizomorphs, which cover the greater portion of the substratum. This form has been collected on two occasions growing on dying blackberry cane. It will not be mentioned again in this bulletin. Since the two above named forms have been discussed at some length in a previous bulletin they will not be mentioned further. The more destructive form of those occurring in the Puget Sound country and the one discussed at some length in this article is intermediate in form between *Armillaria mellea* and *Armillaria mellea bulbosa*.

*Armillaria mellea* is one of the many kinds of low form of plant life which are obliged to take their sustenance from living animals, or plants, or decaying vegetable or animal matter. It consists of two parts—the vegetative and the reproductive.

The vegetative part consists of numerous thread-like strands called the mycelium. The mycelium is the sole cause of all the injury which the toadstool causes. It grows into various substances in order to collect food. Many times these threads penetrate the roots and stems of living plants. They may be confined to one or more spots of variable extent, or may infest the entire body. In many

cases they are not visible to the naked eye, but under some conditions they become abundant enough to form white layers. Throughout more or less exposed places, and especially in the soil, the threads collect in cord-like strands and are enclosed by a thick black or brownish wall. These bodies are the rhizomorphs. The mycelium and rhizomorphs constitute the vegetative part. The vegetative portion has an odor similar to that of the edible mushroom.

The fruiting bodies, which are toadstools, form on the mycelium and rhizomorphs. As the vegetative portion grows it collects an abundance of food. Minute button-like bodies, which are the young toadstools, form on it. With an abun-

dance of food in the mycelium these toadstools mature in size in a very short time. A mature toadstool consists of a stalk with a cap on the top. On the under side of the cap numerous curtain-like projections occur, which are known as gills. They are arranged around the stem similar to spokes in a wheel. On either side of each of these curtains numerous spores are produced. When the spores are ripe they fall to the ground. They are distributed by various agencies. Being very light in weight, they are undoubtedly carried long distances by the wind. When the spores lodge in places favorable to germination they produce small thread-like bodies, which, if a supply of food can be

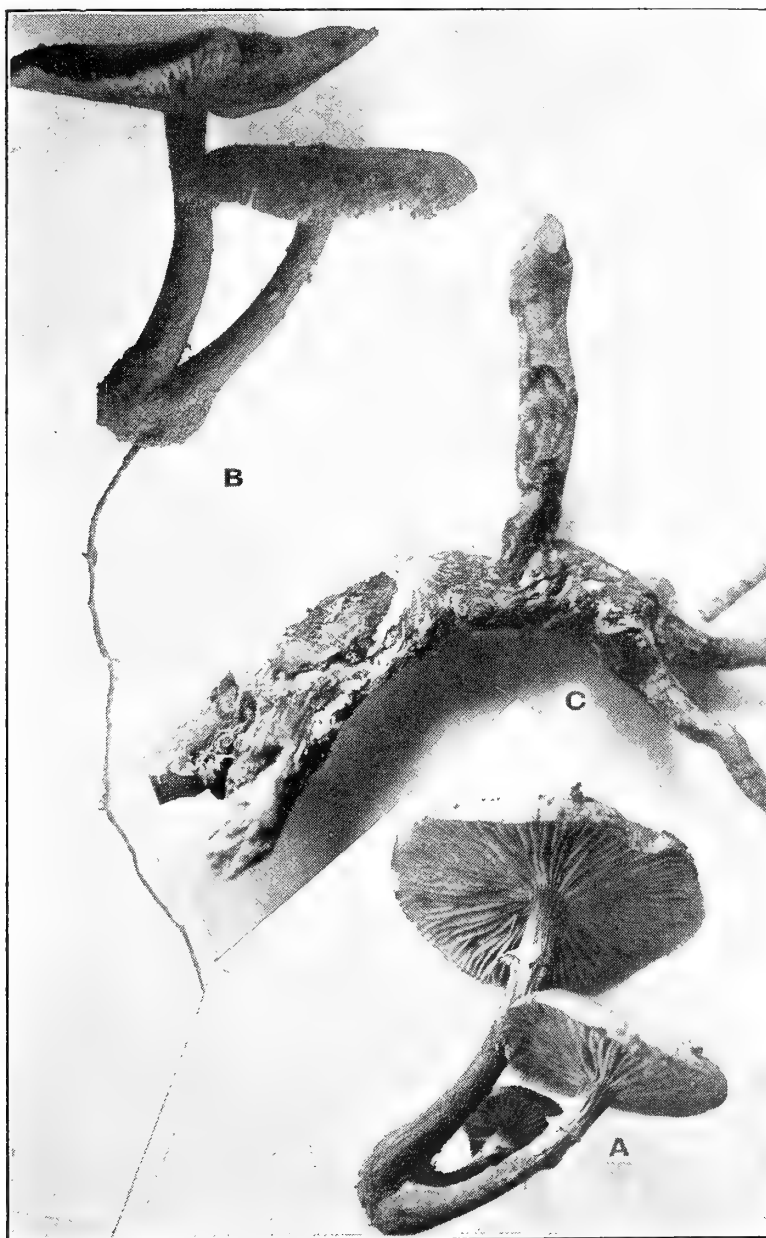


FIGURE 5—SHOWING ALL PART OF ARMILLARIA MOLLEA VISIBLE TO THE NAKED EYE

A, Fruiting bodies or toadstools; B, Toadstools with one form of the vegetable portion (rhizomorph) attached; C, The mycelium, another form of the vegetable portion.

obtained, make a rapid growth. They may soon form countless numbers of delicate branches which are invisible to the naked eye, or may become abundant enough to form many white strands, white sheets or the cord-like black or brownish rhizomorphs. The formation of the toadstools on the mycelium, which in turn produce countless numbers of spores, completes the round of life of *Armillaria mellea*.

From a large series of observations it is concluded that the fungus is naturally a saprophyte, but occasionally becomes a semi-parasite, while under some conditions evidently becomes a true parasite. It is perhaps rightly termed a wound parasite. Many times plants are injured during cultivation. The wounds heal slowly. Occasionally the fungus gains an entrance before a wound has time to close. Small roots sometimes die and remain attached to the large one for a time. The fungus grown in the decaying roots finally comes in contact with the live wood perhaps more or less weakened by the presence of the decaying wood with which it is in contact. The fungus gradually encroaches on the live wood, which slowly succumbs to the action. The fungus thus becomes accustomed to its surroundings and continues to encroach more and more on the live portion of the plant. While digging up one small cherry tree, in which the crown and main roots had been killed for a distance of several inches, an observation was made which shows how this fungus sometimes gains an entrance. One of the main roots, although green and apparently healthy for a distance of about four feet, had a section in the center, about six inches in length, which was brown. An inspection of the root revealed several small rhizomorphs attached to the lower surface. A cross-section of the root revealed an abundance of the mycelium throughout the bark and wood. The root of this cherry tree had grown across a branch root of some plant removed during clearing. As the root decayed it became filled with the fungus, which finally came in contact with the live root of the cherry tree, the result described.

In the examination of a large number of plants, both wild and cultivated, not only a vast difference in the injury to different kinds of plants, but to individuals of the same species was evident.

Two or more fruit trees, apparently killed by the same species of fungus as indicated by the presence of the rhizomorphs, would show marked differences. Some with numerous rhizomorphs growing into them, with many of the roots dead and a portion of the crown badly decayed, lived and matured an average crop of fruit.

In one instance a tree laden with a splendid crop of mature, well colored apples broke off at the crown during a slight gust of wind. In another case a large King apple failed to mature its fine load of fruit. An inspection of the roots and trunk revealed several rhizomorphs clinging to the surface of the perfectly green and sound roots. Low on the crown of this tree a few fissures, such as would naturally occur on a tree of the age of this one, had formed. The cambium layer and neighboring bark and wood, in many places, were completely filled with dense layers of mycelium, which could be easily removed to show their connection and relation with the rhizomorphs occurring on the roots. The fungus had entered through the small fissures in several places in the trunk of the tree, gradually encroached on the surrounding tissues, finally injuring the tree to such a degree that it could not mature its fruit. The tree, other than failing to produce fruit and lacking the usual abundance of foliage of so large a tree, manifested no marked injury.

Another interesting observation was made while examining a cherry tree of some seven or eight years of age that would not respond to an application of barnyard manure, irrigation and good cultivation. In examining the trunk of the tree no rhizomorphs could be seen, nor was there the slightest discoloration of the trunk and large roots, as far as could be determined without threatening the life of the tree. By an accident it was later discovered that some of the roots had been cut while cultivating raspberry plants, which were also grown in this field. By examining the roots at a distance of several feet from the trunk of the tree several of them were found to be dead and in condition of decay. Every one of them contained rhizomorphs, which could be traced along and through the roots for a distance of several inches. Every root gave evidence



FIGURE 3—Showing a portion of the root and stem of young red raspberry plant killed by *Armillaria mellea*. The root shows many rhizomorphs attached to it. Three toadstools occur on the stem. These toadstools are the fruiting stage of the rhizomorphs.

that the fungus was slowly encroaching on the partially green wood.

In the examination of many dead or dying blackberry and raspberry plants very similar conditions to those described above were found to exist. Commonly the crowns of diseased plants were well filled with the rhizomorphs. Very frequently many of the roots were also badly infested. It was not a rare occurrence to examine plants on which the crown, though dead, had many roots that were yet green and apparently healthy a few inches remote from the crown.

In the case of such plants as fruit trees, which are grown some distance apart, only a few scattering trees in an orchard show signs of injury. In the case of bush fruits and other plants grown closely together the neighboring plants are usually affected. Rarely do single hills die or even show signs of injury without the neighboring one becoming infested. Usually one or more plants become infested, and from such places the disease spreads to neighboring plants, which later succumb. In some instances, but of rare occurrence, large groups of



FIGURE 1—SECTION OF ROOT OF BLACKBERRY PLANT, WITH NUMEROUS RHIZOMORPH OF *ARMILLARIA MELLEA* ATTACHED  
This root was killed by the fungus

plants die at the same time. When the disease spreads from plant to plant, as it does in bush fruits, such as the red raspberry, all the plants will be killed in time unless the disease is checked or eradicated. From a casual survey of fields of bush fruits one would naturally conclude that *Armillaria mellea* is very destructive. A microscopic examination of the plants in such cases has shown that such loss is more commonly due to another form of fungus, which is under observation at this time, the results of which study are not ready for publication.

Since the rhizomorphs are so characteristic and so large in size, observations on the distribution of the fungus in the soil are quite readily made with much accuracy. The fungus usually occurs where decaying wood may be found. The type of soil has no influence on distribution, except as it may contain a limited or an abundant amount of decaying vegetable matter. The more humus the soil contains, and the more decaying vegetable matter in the form of limbs and roots of trees and small plants, the better the conditions for the growth of the fungus. While the fungus does occur sparingly in upland soils, the principal study of its distribution in the soil was made in low land and particularly where it had done considerable damage to cultivated plants. It is very evident that the mycelium occurs in great abundance from three to eighteen inches below the surface of the soil. Strands may be found nearer the surface, and especially when the field has not been cultivated frequently. They may sometimes be found at a depth of three feet. In a field of raspberry canes where all the plants had been killed the rhizomorphs

were found extending from the dead roots of the plant out through the soil for several feet, forming a complete network by very frequently branching and rebranching.

After the discovery of the rhizomorphs in such abundance on the roots of many dead plants a careful search was made to note the general distribution of the fungus. In removing agricultural drain tile from a soil in which it had been buried not less than six years to a depth of more than two feet numerous rhizomorphs were found clinging to it. A drain box removed from another portion of the field was covered with a perfect network of the fungus. An excursion through the field revealed it on the decaying roots of stumps and logs of red fir, roots of alder, willow and cottonwood (a single specimen). On the bottom land the roots of live alders were well covered with the strands, while various kinds of decaying wood in a newly cleared but swampy field just being drained were literally filled with the mycelium, largely in the form of rhizomorphs. During the inspection of diseased and dead plants, apple, plum, cherry, prune, gooseberry, currant, blackberry, raspberry and loganberry, in many cases, were found to be badly injured or killed by this fungus. The rhizomorphs of *Armillaria mellea* have been observed in many localities in the Puget Sound region.

Since other forms of fungi cause root rot disease of the same plants on which *Armillaria mellea* grows, much difficulty is experienced in many cases in determining the real cause of the disease. In cases where the plants die without the fungus forming a conspicuous mycelium, rhizomorphs or toadstools, the cause of death can only be determined by the use of a microscope or by the employment of cultural methods. In most instances, however, identification may be made by observing the following rules:

1. Badly infested plants make little or no growth. Usually those in bearing fail to set or to mature good crops of fruit. The leaves may wilt before or after, becoming light yellow in color, or drop off before the close of the growing season. In case the infested plant dies during the dormant season the remaining characteristics must be relied on for identification.

2. The roots and crowns of plants should be carefully examined for the presence of rhizomorphs. They are about the diameter of the lead in a common pencil, usually nearly round, branched, and may vary considerably in diameter within a length of a few inches. In many fields sorrel is very abundant. The roots of these plants, and especially the dead ones, may be mistaken for rhizomorphs. Rhizomorphs may be easily distinguished, however, if the following characteristics are noted. Roll them between the thumb and forefinger. The moist, round body is reduced to a very delicate thread. At the same time the outer dark colored covering is removed as many thin, brown flakes of variable size and shape. There will be a distinct mushroom odor on the fingers. This odor is perhaps the best means of recognizing the rhizomorphs. By pulling the rhizomorphs in sections and examining the broken ends very critically by holding the end near the eye and toward a strong light it will appear like a small tube, from the end of which

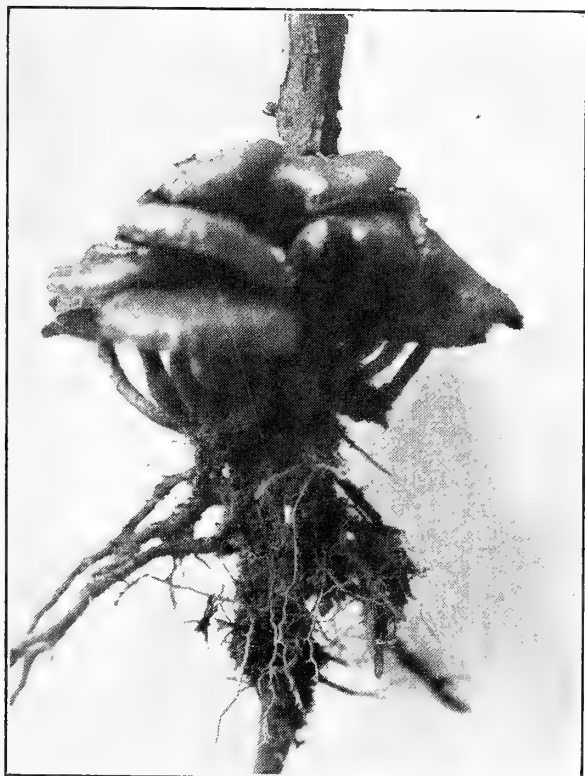


FIGURE 4—CANE OF RED RASPBERRY WITH VERY FEW RHIZOMORPHS ATTACHED TO IT, BUT WITH A LARGE GROUP OF TOADSTOOLS AT THE COLLAR



FIGURE 2—CROWN AND ROOTS OF RASPBERRY WITH NUMEROUS RHIZOMORPHS OF *ARMILLARIA MELLEA* ADHERING TO IT

A large number of the rhizomorphs were growing through the ground around the roots of the plant, some of which may be traced, passing across several branch roots. In all cases where rhizomorphs touched the root, strands from the rhizomorphs grew into them. The illustration also shows numerous strands on the base of the canes and on the main roots, which adhere closely to the wood for their entire length.



projects a mass of fine cottony threads. From this observation it is plainly seen that the rhizomorphs consist of very large numbers of threads of the mycelium, enclosed by a solid coat. While breaking the rhizomorphs into sections it will also be noted that they will slightly stretch before breaking. Roots of sorrel will break off squarely, and will usually snap.

Trace the rhizomorphs on the surface of the plant. At intervals they will disappear. Where the rhizomorphs disappear the mycelium enters and spreads out as a white, fan-shaped layer of delicate threads, which, when abundant, form a white sheet. The black, outer layer of threads has disappeared. This protective coat is not necessary, since the threads are now buried in and protected by the parts of the plant in which they grow. Of the means of identification, rhizomorphs are the best, since they are so characteristic and are most constant of the visible parts of the fungus.

3. As indicated by a large number of observations, the fruiting stage, or toadstool, is seldom formed. In case they do appear they are of considerable service in identifying the disease. They are honey-colored or light brown over the entire surface, including stem, cap and gills. They are about the same size as the common edible mushroom, and may be situated on any part of a root or the crown of a plant. They occur in groups of two or more, and frequently form large, dense clusters. There will be difficulty, in most cases, in finding specimens in which the relation of the toadstools, rhizomorphs and mycelium may be readily seen, since specimens may be taken showing all the parts intact—toadstools bearing a rhizomorph, the end of which terminates in a velvety-white, fan-shaped sheet, or a thin, fan-shaped layer of radiating threads embodied in the roots or crown of the plant, usually lying between the bark and the wood. The toadstools rarely occur until late in the fall, and then only persist for a few days, since they decay quickly. Decay is also hastened by the action of the fall rains. For this reason they are of less diagnostic value in the identification of the disease than the rhizomorphs, which are by far more constant and very seldom decay.

After a plant has become diseased there is no hope of curing it. It may live for a period of several years or may die in a single season. It is advisable to retain diseased fruit trees as long as they produce paying crops of fruit, unless they are a menace to neighboring trees. Since the rhizomorphs seldom occur more than eighteen inches below the surface of the soil the spread of the fungus through the soil may be prevented by digging a trench about two feet in depth around the tree near the ends of the roots. The dirt should be thrown inside the trench line. In removing a diseased or dead tree the trunk and enough of the main roots should be removed to collect all parts containing the fungus in order that the destruction will be as complete as possible.

Diseased plants, such as the bush or other small fruits, should be removed and burned at once. The plants are grown so close together, especially in the rows, that the fungus is readily carried to neighboring plants through cultivation or by the rhizomorphs growing from the roots of one plant into those of another with which they may be in contact; or by growing through the soil from one plant to another, which is not of rare occurrence. After the diseased plants have been removed and burned one should avoid resetting any kind of plant the fungus will attack. When this system has been practiced results have been discouraging. The fungus in the soil will also attack the new plants, and in time will kill them. The ground from which diseased plants have been taken must be utilized for a period of at least three years for growing crops which are not susceptible to the disease, such as grains, grasses and garden truck. There is no known method by which the fungus in the soil can be destroyed. In case toadstools form before the plants are destroyed these toadstools should be collected and burned at once. They pro-

duce countless numbers of spores. Each spore is capable of producing new infection. Trampling the toadstools into the ground, throwing them into the roadway or burying them is not a good practice. None of these methods destroy the spores. The toadstools must be collected and burned in order to accomplish the desired results. There is no doubt that the spores are the best means of scattering the fungus. There is good evidence that in many cases they are responsible for isolated groups of blackberry and raspberry plants becoming diseased.

Since the fungus frequently enters plants through wounds caused in cultivating care must be taken not to cut the roots by deep plowing. The greatest amount of root injury from cultivation is probably due to a lack of cultivation during one or more years, followed by deep cultivation to put the ground in good tilth in as short a time as possible. Such a system should not be practiced, since disastrous results are apt to follow. Practice a good system of cultivation, in order to keep the plants in a vigorous, healthy condition.

## WHAT IRRIGATION IS DOING FOR UNCLE SAM'S

THE following story taken from the columns of the Journal of Commerce and Commercial Bulletin of New York City gives some facts and figures which, to the student of irrigation, present some phases that are entirely new, and also startling. The article also shows the Yakima irrigated lands are considered the most valuable of all watered lands:

"The future of irrigation is large with promise. Eleven million acres were under irrigation in the United States on January 1, 1908; since then the rate of progress has quickened, and a responsible government official now says that 'a conservative estimate is that 30,000,000 acres of land will be reclaimed in the arid West. On this basis there will be homes on the land for more than a million families. Each family on the farm will support another family in the urban communities which will rise on these new agricultural districts. Looking forward to 1950, when our population is likely to be 150,000,000, who can measure,' he asks, 'the importance of a work which will guarantee homes and employment for ten millions of people, and which will bring into cultivation such a vast food producing area? National reclamation gave a wonderful impetus to private enterprise, and astonishing success in the settlement of large areas has followed the efforts of a number of corporations working in conjunction with state governments. There is more activity on the part of individuals in irrigation work today than in any previous time in our history.'

"The need for wider and more scientifically directed agricultural activity was never greater than it is today, when food-stuffs have risen to prices that mean hardships for many thousands, not to say millions, of our population. Irrigation not only turns virgin deserts into fruitful fields, but it makes possible that

intensive cultivation which has been so wantonly neglected, though sorely needed in this country. President W. C. Brown of the New York Central Railroad system, recently pleading for better farming, said: 'Given the same methods of seed selection, fertilization and cultivation, our lands will produce as large crops as those of any other nation. A simple comparison of the average yield per acre of the principal cereals in this country with those of the older nations is the severest possible criticism of our methods, or our want of method. During the last ten years our farms have produced an average yield of wheat of less than 14 bushels per acre. England produces more than 32, Germany about 28, the Netherlands more than 34 and France approximately 20. Of oats the United States produces an average annual yield of 23.7 bushels per acre, England 42, Germany 46 and the Netherlands 53 bushels. Potatoes, like wheat, corn and bread, are also a staple of the poor man. Our average yield is 85 bushels per acre, while Germany, Belgium and Great Britain produce 250 bushels.'

"Irrigation can aid in rectifying all this. For what is irrigation, as now being discussed? It has been aptly described by a well known banking firm engaged in this business as 'the application of moisture to land by artificial means, for the purpose of fertilizing land and stimulating the growth of crops thereon. It may be briefly explained as the permanent diversion of water from rivers, lakes and other sources of supply, and its subsequent conveyance over 19829 Bet Frt Morath 3-17-11 Gal 44 tracts of land, by means of canals and ditches of gradually diminishing size, until through miniature ditches or furrows—perhaps but a foot or two apart—it serves to fertilize the soil with which it is brought in contact. The ideal engineering condition in irrigation projects



involve, initially, a natural lake, at an altitude considerably above that of the lands to be irrigated or a river whose flow is dependable, and whose fall and that of the land is sufficient to permit of the conveyance of the diverted water through canals, by gravity, over the entire contemplated area, together with natural reservoir sites, for the storage of water to supplement the river's flow in times of unusual drouth, and as a safeguard against any contingency which might arise. The diversion from the river may be accomplished by means of dams, those of more recent construction being of rock and concrete, raising the river to a proper height, and provided with numerous gates for the proper regulation of the flow. The main canals, to be of permanency, are constructed of rock, earth and concrete, leading off from the main canals to the ditches, which carry the supply to the individual farms, upon which the flow is regulated by means of frequent headgates, permitting thereby the water to course through the furrows made by the farmer according to his needs, or enabling him to irrigate his land by flooding it. The process of irrigation by no means contemplates a continuous flow of water, but involves a thorough moistening of the soil, perhaps but three or four times during the growing season, according to the character of the crops, and then requiring the water to be 'turned on,' but for twelve or twenty-four hours at a time.

"The proper application of the irrigation thus lucidly described can turn desert soil into fertile fields or orchards worth several hundred dollars, occasionally more than a thousand dollars per acre. The following table, compiled from the detailed records of the United States Reclamation Service, shows where the principal projects are located and a conservatively estimated value of the land per acre when brought under irrigation; it should be explained that in almost every instance this land would be worthless if left devoid of an artificial water supply:

State and Project	Value per Acre
Arizona—Salt River	\$100 to \$750
Arizona-California—Yuma	100 to 500
California—Orland	100 to 250
Colorado—Grand Valley	100 to 250
Colorado—Uncompahgre Valley	75 to 500
Idaho—Minidoka	40 to 100
Idaho—Payette-Boise	100 to 500
Kansas—Garden City	100
Montana—Huntley	100 to 250
Montana—Milk River	75
Montana—Sun River	75
Montana-N. Dak.—Lower Yellowstone	75
Nebraska-Wyoming—North Platte	150 to 250
Nevada—Truckee-Carson	100
New Mexico—Carlsbad	100 to 500
New Mexico—Hondo	75 to 500
New Mexico-Texas—Rio Grande	75 to 300
North Dakota—Pumping	50 to 150
Oregon—Umatilla	100 to 200
Oregon-California—Klamath	100 to 200
South Dakota—Belle Fourche	75 to 150
Utah—Strawberry Valley	50 to 250
Washington—Okanogan	700 to 1500
Washington—Yakima	500 to 2500
Wyoming—Shoshone	150

"The present administration is scarcely less enthusiastic than its predecessor in carrying on the great work of reclaiming parched, useless territory and fitting it to draw thousands of city dwellers from their overcrowded, unhealthy haunts to the bracing virile mountains and plains, thus helping to solve one of the gravest

social problems of the day. The government's projects now on hand are computed to cost a total of \$119,550,000, of which \$47,948,046 had been spent to November 1 last; 3,037,961 acres are to be irrigated, 722,275 having already been completed, while the estimated value of the land when irrigated is put at \$239,435,600, as is shown in the statistical summary (obtained from the Department of the Interior) accompanying this article. In connection with this work there had been built up to June 30 last—and the figures have been subsequently increased since—417 miles of roads, 4,215 miles of canals, 90,388 feet of tunnels, 353,404 linear feet of dykes and levees, 975 bridges of a total length of 25,668 feet and 1,127 miles of telephone lines, while

59,431,463 cubic yards had been excavated, 915,751 barrels of cement utilized and 765,487 yards of concrete used.

"President Taft, in speaking of this work and the financial aspect of it, said: 'No one can visit the Western country without being overwhelmingly convinced of the urgent necessity for the proper treatment of arid and semi-arid lands by the extension system of irrigation. The results in the productivity of the soil when irrigated are marvelous. The mere fact that the reclamation service has gone ahead too fast ought not to prevent Congress from lending its aid to overcome the difficulty. We shall know better in the future use of the \$50,000,000 how to avoid putting ourselves in a similar position again.'"

#### SUMMARY OF NET COST, IRRIGABLE AREA, AND VALUE OF LAND WHEN IRRIGATED OF THE VARIOUS GOVERNMENT RECLAMATION PROJECTS

State and Project	Net cost to Oct. 31, 1909	Irrigable area of land in project		Acres charge for water right	Estimated value of land when irrigated
		Total acreage to be irrigated	Acres now under irrigation		
Arizona—Salt River	\$7,613,219	240,000	131,000	(*)	\$16,400,000
Arizona-California—Yuma	3,497,686	90,100	7,000	(*)	9,000,000
California—Orland	227,728	14,000	.....	(*)	1,400,000
Colorado—Grand Valley	59,794	53,000	.....	(*)	5,300,000
Colorado—Uncompahgre	3,783,917	140,000	20,000	(*)	14,000,000
Idaho—Minidoka	2,574,492	132,031	82,018	\$22.00	7,000,000
Idaho—Payette-Boise	2,576,199	348,000	60,000	30.00	15,800,000
Kansas—Garden City	375,059	10,677	10,661	37.50	1,000,000
Montana—Huntley	905,558	28,921	28,921	30.00	2,169,075
Montana—Sun River	538,223	276,000	14,811	30.00	16,115,000
Montana—Milk River	329,903	215,000	.....	(*)	21,000,000
Montana-N. Dakota—Lower Yellowstone	2,752,753	64,621	43,348	42.50	4,846,650
Nebraska-Wyoming—North Platte	4,236,092	124,000	68,960	35.45	12,400,000
Nebraska-Wyoming—Goshen Hole	.....	100,000	.....	(*)	10,000,000
Nevada—Truckee-Carson	4,004,210	200,000	81,361	{ 22.00 30.00 35.00 }	20,000,000
New Mexico—Carlsbad	678,368	20,073	20,073	31.00	1,505,475
New Mexico—Hondo	343,117	10,000	2,000	(*)	750,000
New Mexico—Leasburg	188,326	20,000	20,000	(*)	.....
New Mexico-Texas—Rio Grande	226,115	180,000	.....	(*)	15,500,000
North Dakota—N. D. Pumping	791,115	23,171	12,097	38.00	1,158,550
Oregon—Umatilla	1,138,425	20,440	11,215	60.00	2,000,000
Oregon-California—Klamath	1,781,987	172,000	30,829	30.00	8,600,000
South Dakota—Belle Fourche	2,165,950	101,967	12,023	30.00	5,098,350
Utah—Strawberry Valley	794,598	60,000	.....	(*)	6,000,000
Washington—Okanogan	518,829	10,000	2,122	65.00	1,000,000
Washington—Yakima (Sunnyside unit)	2,701,957	{ 100,000 36,000 116,000 }	17,701	52.00	31,500,000
Washington—Yakima (Tieton unit)					
Washington—Yakima (Wapato unit)					
Wyoming—Shoshone	3,144,424	131,900	46,135	45.46	9,892,500
Totals, December 8, 1909	\$47,948,046	3,037,961	722,275		\$239,435,600

(\*) Charges not yet fixed by the Secretary of the Interior.

#### HOW TO IRRIGATE BY THE PUMPING SYSTEM

BY R. A. JONES, SPOKANE, WASHINGTON

IT SEEMS strange that a fruit grower should undertake to write a paper on an engineering subject. In explanation of this I will say that previous to my engagement in fruit growing I followed the profession of a civil engineer and was mostly engaged in hydraulic and steam work, therefore I venture to write on this subject.

It is difficult to write an article on the subject that can be read and discussed within the short space of time allotted to each paper and do justice to it.

There is no one particular kind of pump or power that can be considered as best for all cases. For low and medium high lifts the centrifugal style of pump is probably the best. A comparatively new style called the turbine pump is better adapted to high lifts than the centrifugal and for extremely high lifts the piston or plunger pattern gives the highest efficiency. In general I would not advise the use of the centrifugal pumps for heads greater than 150 feet, and 100 feet would probably be a better limit. The centrifugal pumps have in their favor low first cost, very little or no repair expenses, very simple

and not liable to get out of order. In fact they are so simple that it scarcely requires any brains to keep them in order. The greatest objection to them is the low efficiency which can be obtained. This will vary according to the height to which water is raised, and range from forty to seventy per cent. The greater the height the less the efficiency.

Of the piston or plunger type of pumps the outside center packed plunger pattern is the best, but they are also the most expensive, but can be depended upon to give the highest efficiency, generally about ninety per cent. Direct acting or duplex steam pumps are simple and low in first cost, but very wasteful in the use of steam.

First, and the best motive power for pumps, water power by turbine water wheels.

Second, electricity where it can be obtained. But in general it will be necessary to use some other power.

Third, an automatic engine of the compound condensing or triple expansion type. But the great objection to this kind of power is the first cost of

the machine and, too, that it requires skilled engineers to operate them. Such a power as this is more suitable to large plants than to small ones, and I could scarcely recommend such an engine to anyone who intends to irrigate not more than forty or fifty acres. In many cases the gasoline engine would be the best sort of power to use. Producer gas engines are being used to a considerable extent for pumping and other power purposes, and appear to be giving good satisfaction and are economical in the consumption of fuel.

It is claimed by the builders, and some of the users, that they are the most economical form of power (where fuel of any sort is required). I have been unable to get any data on the performance of producer gas engines that would be of any great value to intending purchasers of power plants. The last kind of power which I will consider is the current wheel or current motor. So far I have never seen or do not know of any device in the form of a current motor that is of any value for irrigation on a large scale. They may be all right to furnish water to a house or barn, or small tract of land, but beyond this they are worthless.

In making these remarks on the current motor I do not want it understood that I am making light of the many devices of this sort for producing power. On the other hand, I admire the genius of the inventors, and believe that some of them have achieved as good results and as practical as possible. The point on which they all fall down lies in the fact that the theoretical power of the current which is utilized by the motor is generally very small. Now, it is plain that it is a physical impossibility to obtain any more than the actual theoretical power. I have often heard inventors of current motors claim for certain specified locations that twenty, thirty or forty horse-power naturally existed in those places, but when an accurate measurement was made the actual theoretical power would fall down to two, four or six horse-power, as the case might be. And of this theoretical power it is safe to say that not more than from forty to fifty per cent efficiency can be obtained with the best current motors. This will give in practice only from one to three horse-power, which is rather small for pumping purposes in most places.

Wherever the currents or rapids of a stream show any considerable amount of power then the best way to utilize it and get the greatest efficiency is by the use of the turbine water wheel.

Referring back to the steam engine as a power for pumping I want to say that the most economical engines in point of fuel consumption are not always the ones most advisable to buy. If it is for a plant of considerable power, say from fifty horse-power up, then it may be advisable to use the best automatic engines that can be obtained if the price of fuel is considered. On the other hand, for small plants of ten, fifteen or twenty horse-power the plain slide valve engine will generally be advisable.

Some builders of automatic engines claim to reduce the consumption of fuel to less than half that required by plain slide valve engines. The comparative steam consumption of these engines has been shown by many tests to be about as follows: A good slide valve engine, well proportioned to its load, will develop a horse-power on forty-five pounds of water per hour; a good Corliss automatic engine will develop the same amount of power with about twenty-five pounds of water per hour. In both cases this is for simple non-condensing engines. With the compound or triple expansion engines of very large size the amount is then reduced to approximately ten pounds of water per horse-power per hour. But such a plant as this would be quite out of the question for the ordinary sized piece of land, which will generally range from ten to forty acres.

To get the amount of fuel required for a horse-power we find, in practice, that about the best result obtainable is the evaporation or conversion into steam of ten pounds of water per pound of first class coal. This would give for the finest constructed plants one horse-power per pound of coal per hour, and for the plain, common engine one horse-power for four and one-half pounds of coal. But in common practice these results are not always obtained, and I personally know from experience that double these amounts of fuel are used. Fine tests, showing great economy, is one thing and the results of common practice is quite another.

The amount of gasoline required to produce a commercial horse-power is generally estimated at one pint per hour per horse-power. I have known of cases where they claim to produce a horse-power with half the amount, but in general I do not think it is safe to rely upon such a small quantity.

At one time I was working nine steam engines, ranging from ten to one hundred horse-power, and the cost of fuel was an important matter. I found by a practical test that a cord of dry fir or tamarack wood would do as much work as a ton of Rock Springs coal.

The limit of elevation which it is practical to lift water by pumping for irrigation depends almost entirely upon the value of the crops produced. High priced and very valuable crops will stand the cost of pumping to elevations as high as 300 to 400 feet. At my own place, near Spokane, I pump to an elevation of about 200 feet with steam power and irrigate about forty acres. We use a 7x10-inch twelve horse-power slide valve engine, connected by a belt to a Gould triplex plunger pump, and a thirty horse-power boiler, and it requires about two cords of fir or tamarack wood per acre per year. This is for about eighty days' irrigating season, and using about three-fourths of an acre foot of water. These results are not economical, but our wood costs only the cutting.

The amount of water required per acre varies greatly in different localities for different crops and different age trees. The climatic conditions alone will affect the amount of water required to a large

extent. An old orchard will require several times as much water as a very young one. Sandy soils need very much more water than fine, compact soils.

It will be seen from the above forms of power for irrigation and from local conditions that no definite or exact amount of fuel or cost per acre can be given that will cover all cases, but careful consideration and examination by some competent engineer should be made for each particular location.

At this point it may be well to say that in many of the United States government calculations the engineers allow one cubic foot per second per 160 acres, which is equal to one acre foot in about eighty days. An acre foot is the amount of water required to cover an acre of land one foot deep. In some cases this amount is more than is necessary, while in others it is entirely inadequate.

The first thing to be considered in a pumping project is the amount of water needed and the next is the amount of power required; third, the kind of power best adapted to the location, which can be determined as follows: First, water power by turbine wheels; second, if you are near an electric line then electric power would be the next choice; third, if you are in a locality where wood or coal is plentiful and cheap then a steam engine would probably be the best, especially if you are in a locality where gasoline is expensive; fourth, if at a considerable distance from a railroad and not under any of the above conditions then a gasoline engine would be advisable; fifth, if near a lignite mine or in a locality where lignite or other suitable fuel can be obtained at a reasonable price then I would say investigate carefully the producer gas engine.

In estimating the amount of power necessary for pumping three factors must always be considered, as follows:

Time, number of cubic feet of water and the height it is to be raised. The application of these three factors give only the theoretical power, and it is the common practice to double the theoretical power to overcome friction, leakage and other imperfections. The size of delivery pipe is often responsible for waste of power. It should be borne in mind that by doubling the diameter of a pipe increases its carrying capacity nearly five times, yet it does not generally cost more than twice as much. It may also be well to mention that the amount of power required to pump any given quantity of water (other things being equal) is directly in proportion to the height at which it is to be delivered. For example, if it requires ten horse-power to pump a certain quantity of water to an elevation of 100 feet it will require twenty horse-power to pump the same quantity two hundred feet high.

Reducing to its simplest form the contents of this paper we may deduce the following, from which conclusions can be drawn as to the best means of power and pumping by taking into consideration local conditions: First, the water power by turbine wheels is first choice; second, that electric power, when it can

be obtained reasonably, is second choice; third, that a cord of seasoned fir or tamarack wood is about equal in fuel value to a ton of Rock Springs coal; fourth, that it requires about one pint of gasoline per horse-power per hour in gasoline engines, or distillate; is probably about thirty per cent cheaper; fifth, that it requires, as shown by scientific tests, at least one pound of coal per horse-power per hour for the best steam engines obtainable, and about four and one-half pounds per horse-power per hour for common engines, and I would add at least fifty per cent to these amounts of coal to make good in practice; sixth, that centrifugal pumps are not recommended for lifts much over

100 feet; seventh, that where centrifugal pumps are used more power must be provided to do the same work as with plunger pumps; eighth, that large pumping plants are proportionately more economical than small ones; ninth, that it requires 1.71 theoretical horse-power to raise sufficient water 100 feet high (and other elevations in proportion) to cover ten acres one foot deep in eighty days, and this theoretical power should be doubled to give satisfactory results in practice, or about three and one-half horse-power; tenth, the cost of attendance and incidentals must be considered, bearing in mind that turbine water wheels and electric motors need but little attention.

## ORIGIN AND RESULTS OF DEMONSTRATION TRAIN

BY PROFESSOR W. T. CLARKE, UNIVERSITY OF CALIFORNIA

**T**HE Special Agricultural and Horticultural Demonstration Train now being operated in California by the Southern Pacific Company, and co-operated in by the College of Agriculture of the University of California, is by far the most extensive effort of this kind that has ever been put forth in any part of the country. As such is the case, a few words of explanation as to the inception, meaning and the value of this train are in order.

The spirit of the great transportation companies of today is to recognize the fact that the success of the producers along its lines means the greater success of these companies. A spirit of co-operation with the producers is manifested, and the Southern Pacific Company, recognizing the fact that better results should be obtained from the farms of the state, and also recognizing the fact that its best interests are bound up in the success of the producers, has joined with the College of Agriculture and Experiment Station of the state in bringing to the farms and to the workers thereof improved methods of procedure, whereby better returns could be obtained. The inception of the idea of the Demonstration Train, then, is to be found in the recognition of the interdependence of the producers and the transportation company, and, further, the recognition of the fact that the College of Agriculture and Experiment Station has much of value to illustrate and show the men and women of the farms.

The first train to be sent out in this co-operative endeavor began its work on November 9, 1908, covering, in the eight days that it was out, the northern and southern portions of California. The train consisted of two carloads of exhibits illustrating better methods of agricultural and horticultural practice, and also methods of control of insect pests and diseases of trees against which the producer had to contend. A total of six runs was made in the season of 1908-9, and all of the Southern Pacific lines in California, with but few exceptions, were covered by the train service. A total of 37,270 people visited the train on these runs, and a great deal of interest was manifested by these visitors.

The season for 1909-10 began on the 16th of November, 1909, and covered much of the same territory as was covered in the season of 1908-9. During this season the train was in service a total of sixty-eight days and made 223 stops. A total of 73,663 people visited the train. In this connection it is interesting to note that during the season of 1908-9 twenty-six such trains were run in the United States. A total of 182,745 people visited these trains. The California total is included in these figures. It then follows that forty per cent of the people visiting demonstration trains in the United States were those who visited and obtained information and inspiration from the California train. This is a record to be proud of, and surely indicates the appreciation in which this work is held.

The season for 1910-11 began on the 5th of December, 1910, and on the first run of ten days the same territory was covered that the train visited in its first run last year. Visitors to the number of 14,217 came to the train on this run, an increase of sixty-seven per cent over the number for the same run last year. This again speaks well for the value of the Demonstration Train.

Six cars are at the present time devoted to the purposes of demonstration and illustration. The material carried in these cars illustrates better methods of procedure in all lines of agricultural and horticultural practice and demonstrates the great value of improved methods of work experimented with and advocated by the Experiment Station of the University of California. The train, with its well equipped departments and its living cars for the use of the experts accompanying the train, may be considered, and indeed is a university on wheels, carrying to the tillers of the soil the gospel of better horticulture and better agriculture, and indicating by concrete examples methods through which much better returns may be obtained on the farm.

The meaning, then, of this train service is to be found in the expression, "education of the producer carried along more scientific lines of work." The value of the train service can hardly be overestimated. Many earnest people

who visited the train during its 1908-10 runs have re-visited it this season, and have spoken enthusiastically of the good the work had done them. There is much evidence on hand to show that methods of practice illustrated and described during the last year's runs have been put into use in the meantime, and are producing satisfactory results. An immense amount of correspondence has come in regarding the work already done, indicating that the writers of the letters received, were thinking of, studying and searching for further information along the lines touched upon in the train.

The bringing of the work of the College of Agriculture so directly to the producers of the state is to be credited to the enlightened action of the transportation company. The expense of maintaining a moving train of this character is far too great for any educational institution to undertake, and the recognition of the value of this work and the very tangible illustration of this recognition by the transportation company is an idea well worthy of consideration by all thoughtful people. The Special Agricultural and Horticultural Demonstration Train, operated under the joint auspices of the University of California and the Southern Pacific Company, is unquestionably the greatest as well as the most far-reaching educational and value-improving factor ever set in motion in this State of California.

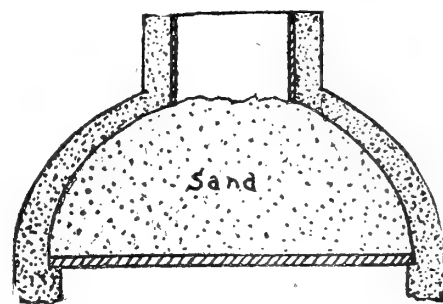
◆ ◆ ◆

### TO BUILD A CONCRETE ARCH.

Where it is desired to arch over a well or cistern, or any other structure, the following method will be found of practical use:

After the wall is to the point where the arch is to begin, or the skewbacks, lay a temporary platform of boards on the wall with the edges resting on same just enough to hold, and no more; upon this pile up sand into the form the arch is to be made, and within about eighteen inches of the top of the ground; upon this sand set a box form to mold the manhole to the well.

Now plaster the concrete around the



sand and box form in the manner shown in illustration; for all ordinary work it should be from three and one-half inches to five inches thick, depending on the diameter of the well or cistern.

As soon as the concrete has hardened take out the sand with shovel, then the temporary platform may be removed and the work plastered on the inside. —Iowa Homestead.

# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF

THE NORTHWEST FRUIT GROWERS' ASSOCIATION

A MONTHLY ILLUSTRATED MAGAZINE

PUBLISHED IN THE INTEREST OF MODERN

FRUIT GROWING AND MARKETING

ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD

EDITOR AND PUBLISHER

C. R. GREISEN, *Assistant Editor*

H. E. VAN DEMAN, *Contributing Editor*

STATE ASSOCIATE EDITORS

OREGON

A. B. CORDLEY, *Entomologist*, Corvallis

C. I. LEWIS, *Horticulturist*, Corvallis

P. J. O'GARA, *Pathologist and Entomologist*,  
Medford

WASHINGTON

W. S. THORNER, *Horticulturist*, Pullman

A. L. MELANDER, *Entomologist*, Pullman

COLORADO

C. P. GILLETTE, *Director and Entomologist*,  
Fort Collins

E. B. HOUSE, *Chief of Department of Civil and  
Irrigation Engineering*, State Agricultural  
College, Fort Collins

E. P. TAYLOR, *Horticulturist*, Grand Junction

IDAHO

W. H. WICKS, *Horticulturist*, Moscow

UTAH

DR. E. D. BALL, *Director and Entomologist*, Logan

LEON D. BATCHELOR, *Horticulturist*, Logan

MONTANA

O. B. WHIPPLE, *Horticulturist*, Bozeman

CALIFORNIA

C. W. WOODWORTH, *Entomologist*, Berkeley

W. H. VOLCK, *Entomologist*, Watsonville

BRITISH COLUMBIA

R. M. WINSLOW, *Provincial Horticulturist*, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR

IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,

at the Post Office at Hood River, Oregon,

under Act of Congress of March 3, 1879.

THE editorial space of "Better Fruit" is always considered one of our strong features. There are several broad and important problems before the fruit growers of the Northwest today which are entitled to editorial space, but instead of discussing them editorially it seems wisest to publish the contributed articles which have been sent in, for the reason that these contributed articles cover the subjects more forcefully and more thoroughly than they might be covered by the editor of "Better Fruit." Therefore, we call the attention of the readers to the following articles, in lieu of editorials, which appear elsewhere in this edition:

"The Central Selling Agency for the Northwest Fruits," so ably handled by H. O. Stechhan, who has been in close touch with H. W. Otis, chairman of the executive committee appointed at Walla Walla conference in February. Elsewhere in this edition will also be found the general plan for central exchange as adopted by Walla Walla delegates. The editor of "Better Fruit," having just returned from California, being detained by illness, was unable to attend this meeting. It is understood that this general plan will be presented to the individual districts for approval or correction, and will again be presented at a meeting of these delegates at some place in the near future. So far the place has not been designated nor the date set, but

it is understood that another meeting of delegates will be called, of which due notice will be given, some time in April. Especial attention is called to the "Resolutions and Rules Applying to Storage in Transit of Apples," adopted by a conference composed of delegates of the Western Fruit Jobbers' Association, the National League of Commission Merchants and the National Apple Shippers' Association. Another article touching this matter is a set of resolutions, which appears in this edition, adopted by a committee of the Central Selling Agency of the Northwest fruits. On this same subject we publish an article entitled, "Storage in Transit," being a review of the situation, which appeared in the "Spy," a journal published in the inter-

ests of the National Apple Shippers' Association.

After careful perusal of all these articles they must be conceded to be of vital importance to the fruit growers of the Northwest. Each and every one of these articles, by men thoroughly familiar with the situation, handle the respective subjects in such an able manner that it leaves but little for editorial comment, and they are published in this issue complete, without any alterations.

The editor, having been in California for some time, and his time having been taken up on other matters that could not be postponed, feels that he is insufficiently informed on the subjects treated to warrant further editorial elucidation.

## CENTRAL SELLING AGENCY for NORTHWEST FRUITS

BY H. O. STECHHAN

NO movement among any body of men engaged in soil culture ever undertaken heretofore promises to have such far-reaching beneficial effects all around as the projected organization of the fruit growers of Washington, Oregon, Idaho and Montana for the handling of their crops through one central selling agency. No improper methods of control are contemplated which might be construed to operate in restraint of trade. The whole purpose is to create a system of distribution that will eliminate disastrous competition among those whose interests are identical, thereby putting the horticultural industry of the Northwest on a sound business basis; in accordance with its just deserts.

The present value of the crop to be handled has been estimated at \$10,000,000, but there is no definite information on the subject. That brings up another imperative need for this organization, viz., the gathering of information concerning the fruit growing industry so that it will be available for all persons connected with the business, to be used by them intelligently, just like the lumbermen, the cotton interests and wool growers have been able to advance their prosperity through similar co-operative efforts.

Without doubt most fruit growers in the Northwest today have been making a profit, but when it is taken into consideration that a steadily increasing acreage will begin to yield marketable stuff in the next five and ten years the necessity for some means of distributing intelligently the increasing output will be seen. To this end it is essential that the producer be made independent of the middleman, who controls the situation now, frequently to the disadvantage of the grower, the dealer and the consumer as well.

At the conference of Northwest fruit growers recently held in Walla Walla, following the preliminary meeting in Portland, a tentative form of organization was agreed upon, which follows the suggestions made some years ago by Secretary of Agriculture James Wilson. An executive committee was named, consisting of representatives of all the fruit districts in the Northwest. After

thrashing out the scheme each one was instructed to take it up with the home association of growers and to report back at a subsequent meeting which is to be held in April. H. W. Otis, of Wenatchee, was made chairman of the executive committee. In advocating the central selling agency as offering relief to all fruit growers Mr. Otis emphasizes the fact that the plan is not a hastily formed scheme, but the result of carefully studying conditions that have confronted all agriculturists for years. As one of the foremost growers of the Wenatchee Valley, where he has brought a large orchard into bearing, Mr. Otis speaks with authority.

In the accompanying authorized interview Mr. Otis seeks to put before the readers of "Better Fruit" compactly just what the organization is and intends to do. He says:

"No outside promoters or influences have any part in the attempt to line up the fruit growers of the Northwest to put the orchard industry on a sound basis. By this movement the growers merely wish the privilege of handling direct that which they are producing instead of taking the blind chances of delegating the distribution to produce speculators. The plan of organization adopted at Walla Walla is the outgrowth of definite conditions confronting the growers in the Northwest. It is true that the most of them have been making money up to date, but in the face of a steadily increasing output every year it becomes necessary to take steps to develop new markets systematically to insure consumption of the large crops that will be raised on their increasing acreage in the next five and ten years.

"The entire lack of co-operation on the part of orchard men in the various districts, in the face of identical interests, the total absence of intelligent or systematic distribution, with the attendant evils of disastrous competition among the districts, have made the markets undependable and fluctuating. The result has been invariably the source of loss to the dealer as well as the grower. As a remedy it is proposed that district associations shall be formed, as already exist

Continued on page 51

# "Ortho 40" Zinc Arsenite

**W**E ARE the *originators* of this arsenical as an insecticide, and consider that it meets a long felt want for a strong poison which is reasonably safe to use on foliage. "Ortho 40" Zinc Arsenite contains over 40 per cent of arsenious oxide, equivalent to 46 to 50 per cent of arsenic oxide in the form of arsenate of lead. It is thus seen to be a close rival of Paris green with regard to arsenic content. It is a light, fluffy powder, readily goes into suspension in water, and requires little or no agitation, and affords a very fine covering for the apple against insects. On apples it has been sprayed as heavy as whitewash without the least bit of injury. With the use of this material there are very few, if any, stung apples. This advantage alone will raise the average grade of apples in the Northwest at least 10 per cent. There is no danger of arsenical injury of the soil with this material. The equivalent of 12 cents' worth of poisoning in arsenate of lead can be purchased in this material for five cents, or almost a third of the present price of arsenate of lead.

If you want a material which will control codling worms to greater perfection than you have ever had them controlled before, which will produce no injury in the dry interior valleys of this Coast, and for a price of about one-third of what you are at present paying for arsenate of lead, this is the material for you

Try ten pounds of it, which will cost you, express prepaid, \$2.50, and if you are not satisfied with your results, upon receipt of such information we will return your money. "Ortho 40" Zinc Arsenite is guaranteed under the United States Insecticide Law of 1910 to contain approximately 40 per cent of arsenious oxide. Write us

## California Spray-Chemical Company

Manufacturers of Chemical Sprays : Factory, Watsonville, California

Distributors in all the Principal Fruit Growing Sections of the West



# HOOD RIVER

## Makes New High Records

- 1** In competition with twenty-two cars from Northwest Apple Districts. Won Sweepstakes and \$1000 cash prize.
- 2** In competition with four cars Spitzenbergs. Won Best carload of Spitzenbergs and \$250 cash prize.
- 3** In competition with four cars from Northwest Apple Districts. Won Best carload Newtowns and \$250 cash prize.
- 4** Won Association of Chamber of Commerce of Chicago, \$500 Silver Cup for Best Packed Car.
- 5** At Portland, in competition with State of Oregon, Hood River won nearly every entry in one, two, three order.

This only proves our claim of ten years standing—HOOD RIVER is the quality fruit district—the ideal location for *you*

FOR FURTHER INFORMATION WRITE THE

Secretary, **Hood River Commercial Club**, Hood River, Oregon

Continued from page 48

in some of the fruit sections, to control all of the details of growing and assembling the crops.

"These associations will form the nucleus of the central selling agency or exchange, which will have charge of the marketing. It will be properly located and equipped to handle the big business in an up-to-date way, employing the best sales manager and traffic expert that can be had for money. An executive committee representing each district will constitute the governing board. None of the districts will have to lose their individuality, as that feature will, in many cases, be an important aid in selling the crop. An educative publicity campaign will be carried on, like that of the California orange growers, to enlarge the demand for Northwest fruits.

"It is definitely stated and distinctly understood that the new organization shall not operate in restraint of trade. It will seek to advance the best interests of the grower and consumer, thereby incidentally benefitting the legitimate dealer in the long run by doing away with much of the speculative uncertainty that now accompanies the handling of fruits and produce. By eliminating the middleman in the selling of fruits direct from the grower to the dealer there will be a tendency to bring relief to the consumer by reducing the cost to him. Such an effect should be generously welcomed.

"The members of the executive committee named at the Walla Walla conference to put this plan into execution

are now busy in their respective districts, acquainting the growers with the various details and adjusting any differences that may arise. A meeting will be called early next month, at which time the committeemen will report back their results. From advices received I have no doubt that we will be able to begin operations this year. All of the districts may not come in, but if it is found desirable to organize local associations, as many of the districts have done, without all the growers co-operating in the work, it strikes me that it will be just as well to launch this movement if only a limited number of districts decide to come in. There may be some difficulties, but they will not prove insurmountable, and before long, I am sure, we will be able to line up the solid Northwest."

Mr. Otis says that there is a woeful lack of knowledge as to the exact status of the fruit industry in the Northwest. The government compiles some statistics that are good as far as they go, but they have proved entirely inadequate. One of the first things this organization will undertake is to find out just where the fruit industry is "at," the same as the timbermen, cattlemen and wool growers have done. "There has been too much guess work," says Mr. Otis. "The time has come when we must introduce a system based on accurate knowledge of conditions.

"Because of the largeness of the problem many of the districts have hesitated to enter any scheme for organizing the

whole Northwest. They have drifted along, letting the situation handle them instead of trying to handle the situation. There is nothing too big for an intelligent organization—one that is right and honest. This one is. The fruit growers simply want to take care of their best interests and get what they are entitled to for their labors. To be sure of this in the future it is necessary that they take action now."

The executive committee named at the Walla Walla convention is composed of the following well known fruit growers, representing all parts of the Northwest: H. W. Otis, Wenatchee, chairman; Sherwood Williams, La Grande, secretary; C. E. Whisler, Medford; J. F. Forvis, Dillley, Oregon; C. H. Sproat, Hood River; Miles Cannon, Weiser, Idaho; W. B. Lanahan, Clarkston; William Teadt, Hamilton, Montana; J. E. Trimble, Garfield; H. D. Lamb, Milton, Oregon; W. L. Nelson, North Yakima. These men will meet again on the call of Chairman Otis at a place to be designated. The Walla Walla conference was preceded by a preliminary meeting in Portland last January.

## J. F. LITTOOY

### CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO



## Be Sure You Are Right

It is a foregone conclusion that you believe in a Lime-Sulphur Spray. Now you want to know which brand of Lime-Sulphur Spray is best—and why.

Niagara Brand will stand your tests. It has been tested and retested—used upon trees in orchards from which has been picked perfect fruit—in fact, has been proven to be O. K.

### A COMPARISON FOR YOUR CONSIDERATION

	Total Lime	Total Sulphur
Sample No. 1	10.73	26.63
Sample No. 2	11.94	30.03
Sample No. 3	12.00	29.21
Sample No. 4	12.12	23.98
Niagara Brand	19.65	31.44

Niagara Brand Lime-Sulphur Spray is 19.65 total lime and 31.44 total sulphur. It is the very best spray we know how to make. The result of test after test, both in the laboratory and in the orchard. A positive and a proven successful Lime-Sulphur Spray, evidenced by the perfect fruit picked from the trees upon which it has been used. Ask the successful orchardist what he thinks of Niagara Brand. Don't take chances. Niagara Brand may cost a little more than inferior brands, but the increased profits you will receive from your crop as the direct result of using Niagara Brand will be a good and sufficient argument for buying it. Niagara and Triangle Brands of Arsenate of Lead are best, too. Our Leads are very fine. We can furnish either Pyro or Ortho. We recommend Pyro over Ortho because of its quick killing power. We are agents for Bean Spraying Machinery. Send for our booklet, Successful Spraying. It contains much valuable information. It will be sent free upon receipt of your name and address.

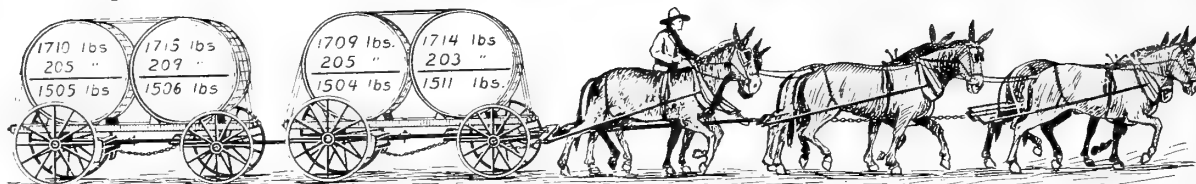
## The Hood River Spray Manufacturing Company

Post Office Box 74A

HOOD RIVER, OREGON

In the March "Better Fruit" we submitted you some of the "Expert Testimony" received; we now give you some practical illustrations of the further advantages of

# "BLACK LEAF 40"



1. The "old way": Hauling Tobacco Stems to the ranch, to make "Home-made" Extract. Total weight about 6,800 pounds.

**NICOTINE YIELD**, about 42 pounds. Sufficient to make 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." Under the "home-made" process, **no uniformity** could be counted upon.

2. "Progress": Hauling twenty-eight five-gallon cans of "Black Leaf" Tobacco Extract to the ranch.

3. "The Latest": Taking one case (ten tins) of "Black Leaf 40" to the ranch.



Total weight about 1,750 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**



Total weight about 160 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**

Owing to the large dilution, neither foliage nor fruit is stained. Like our "Black Leaf" Extract, "Black Leaf 40" may be applied when trees are in full bloom and foliage, without damage to either. Also, "Black Leaf 40" is perfectly soluble in water—no clogging of nozzles.

**PRICE:** {  $10\frac{1}{2}$ -lb. can, \$12.50, makes 1000 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
 $2\frac{1}{2}$ -lb. can, 3.25, makes 240 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
 $\frac{1}{2}$ -lb. can, .85, makes 47 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"

These prices prevail at **ALL** agencies in railroad towns throughout the United States. If you cannot thus obtain "Black Leaf 40," send us postoffice money order and we will ship you by express, prepaid.

**The Kentucky Tobacco Product Company (Incorporated), Louisville, Kentucky**

## ORGANIZATION OF A CENTRAL FRUIT EXCHANGE

**A**FTER being in session several days the delegates to the Central Fruit Exchange took decisive action at Walla Walla by the adoption of a selling agency for the entire Northwest. In pursuing this course it is believed that fruit men have taken a step that will either be the most beneficial the fruit industry has ever known or it will cost them heavily for a year or so, and give them much valuable experience.

The main rules governing the establishment of the Central Exchange, the district agencies that compose it and the growers' organizations that compose the district associations are:

The Central Exchange will have the exclusive selling of all the fruit or products controlled by the district association holding a membership in the central. It will establish a sales system covering all markets where it is practical to sell the products of its members. It will establish such rules and regulations as are necessary for the proper caring for and marketing of said products, also such rules as are necessary for the maintaining of uniform grades and packs, and for the placing of the products of its members on the market in the best and most salable condition. It will maintain an efficient system of market and crop reports. It will do such advertising as is found necessary. It will strive to eliminate all unnecessary intermediate expense wherever possible. The Central

Exchange will be maintained by a selling charge of not to exceed ten cents a box for apples, and on other products in proportion to the cost. The name, Central Exchange, and such trade mark or brands as it may establish shall appear in a prominent place on each package. The products of each district shall be marketed on their own merits. Each district shall be given its proportionate share of all markets.

The district associations will have control over the grading and packing of the products of its members. They will employ a sufficient number of inspectors to supervise grading, packing and loading. The operating expenses of the district associations will be met by a commission charge on all products and supplies handled. All profits derived from charges made to members for the handling of their products and supplies in excess of the maximum amount decided upon for the surplus fund, and all moneys received from Central Exchange in the form of profits from handling products shall be distributed annually among the members in proportion to the products handled for them. The membership of the district association shall consist of growers' organizations. The affairs of the district association shall be managed by an executive committee of five trustees.

The growers' organization shall have full charge of handling and preparing the

**I**T'S as easy to buy a good spray as it is to buy the other kind. And it's easy to know you are getting the best if you buy

## Devoe Arsenate of Lead

It's as good as can be made; that means purity, effectiveness, results.

## Devoe Lime and Sulphur Solution

is a strong fungicide.

## C.T. Raynolds Paris Green

for potato bugs is the best possible to make; that means the best to use.

See that your dealer supplies you. We will, if he won't.

**DEVOE & RAYNOLDS COMPANY**  
CHICAGO

New York Kansas City Denver

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

products for market. It shall employ and have control over all help needed. It shall provide warehouses, packing houses or loading platforms necessary for handling products. All products for shipment are to be turned over to the district association when properly loaded on board cars or other means of transportation to market, as may be specified. It may own and operate carriers, by-product factories of all kinds, cold storage and pre-cooling plants. Growers' organizations shall make a loading or handling charge of a sufficient amount per package on all products or supplies handled to meet the expenses of the organization.

The grower shall, when called upon to do so by the Central Exchange, enter into a binding contract, appointing the Central Exchange his exclusive selling agent for all of his products of the kinds and varieties handled by the exchange, except as otherwise provided for in the contract. The contract shall be for a period of three years; provided, however, that any member may withdraw March 1 of any year by giving fifteen days' previous notice in writing.

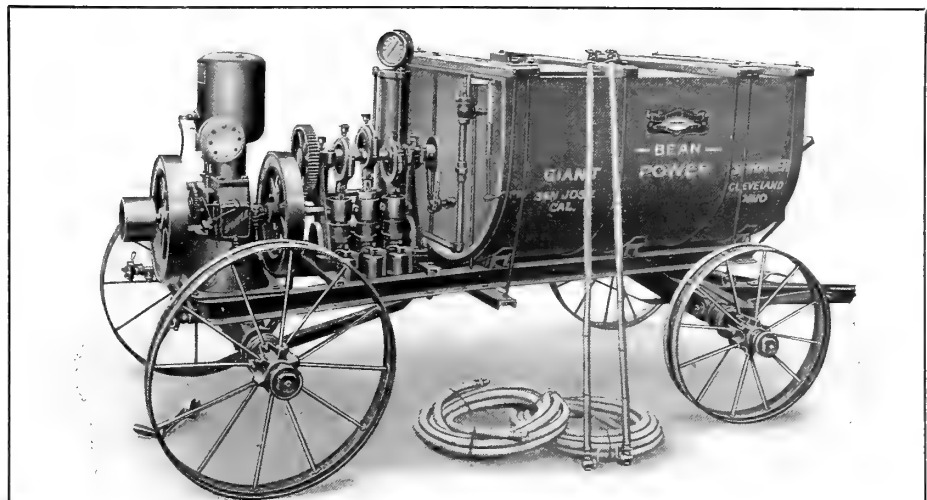
Men named to perfect the exchange and the districts they represent are: H. W. Otis, chairman, Wenatchee district, Wenatchee; C. E. Whisler, Medford, Southern Oregon; J. F. Forvis, Dillery, Western Oregon; C. H. Sproat, Hood River, Central Oregon and Southern Washington; Sherwood Williams, La Grande, Eastern Oregon; Miles Cannon, Weiser, Idaho; W. B. Lanahan, Clarkston, Snake River; William Teadt, Hamilton, Montana; J. E. Trimble, Garfield, Inland Empire; H. D. Lamb, Milton, Oregon, Walla Walla district; W. L. Nelson, North Yakima, Yakima district.

The grading of apples has also been fixed by rules that cannot be mistaken. These grades are:

Extra fancy grade consists of perfect, well formed apples only, free from all insect pests and all defects. All varieties of apples admitted to this grade shall be well matured and of natural color characteristic of the variety; Spitzenberg, Wine-sap, Jonathan, Arkansas Black, Gano, Lawvor and other solid red varieties must have seventy-five per cent of good red color. Ben Davis, Rome Beauty, Baldwin, Wagener and other varieties of similar color must be fifty per cent red. Red Cheek Pippins and Winter Bananas must show a red cheek.

Standard grade must be free from all insect pests, worm holes, scale, sunscald, dry rot, water core or other defects; skin punctures or evidence of rough handling shall be considered as defects. Slight limb rub or one small sting healed over will be permitted, provided not over ten per cent of the apples in any box shall be so marked. All varieties of apples admitted to this grade shall be well matured and of natural color.

"C" grade shall be made up of all merchantable apples not included in the extra fancy or standard grades. These apples must be free from all insect pests, but will include misshapen apples or



## Bean Power Sprayers

THE FIRST COST IS THE ONLY COST

Notice this illustration. Study the compact, clean-cut build of this outfit. Simplicity and compactness of construction are features that distinguish the entire Bean line—and are especially prominent in our power outfits, the Bean Giant, the Bean Challenge and Bean Pony.

All unnecessary intricacy has been eliminated—that's why a Bean sprayer requires the minimum of attention, and is operated at practically no repair expense at all.

All parts are interchangeable and readily accessible. Whenever a part becomes worn it can be replaced in a few moments at trifling cost. Duplicate parts are always carried in stock and you can order from our catalog.

In every Bean power sprayer you'll find porcelain-lined cylinders, bell metal ball valves, Bean patented ball relief valve, standard engines of reputable makes, perfect rotary agitators, and a score of features that every good power outfit ought to have.

Buy direct from the dealer in your town or write direct to us and we will ship to you from our stock in Portland or Spokane.

## BEAN SPRAY PUMP CO.

EVERYTHING FOR SPRAYING

213 WEST JULIAN STREET, SAN JOSE, CALIFORNIA

ALSO CLEVELAND, OHIO

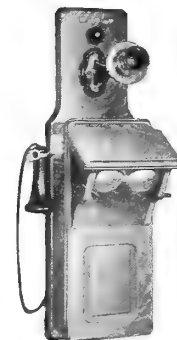
apples having a limb rub or other slight defects. Apples of this grade may also contain two worm stings or apples showing slight bruises. They need not be wrapped.

## STORAGE

Ship your Furniture to us  
to be stored  
until you are located

**Transfer & Livery Co.**  
Hood River, Oregon

## The Ring of Your Telephone



Today is a part of your life. You answer as you do the knock on your door.

It lifts the latchkey of your neighbor, though he be miles away by the highway.

It aids you in fire and accident—saves time and money.

But it must be a reliable, efficient telephone.

Get the best telephone made—it's good economy—experience proves it.

Kellogg telephones and systems are known as standard apparatus everywhere.

Write to us for information and prices. Farm telephone bulletins mailed on request.

**KELLOGG SWITCHBOARD AND SUPPLY CO.**

Chicago

Manufacturers of Standard Telephone Equipment

# GROWING OF BLACKBERRIES AND RASPBERRIES

BY W. S. THORNER, HORTICULTURIST WASHINGTON AGRICULTURAL EXPERIMENT STATION, PULLMAN, WASHINGTON

**T**HE soil, temperature and general conditions of many parts of the State of Washington are admirably adapted to the commercial growing of practically all kinds of small fruit. This is particularly true of raspberries, blackberries and loganberries. Several localities west of the Cascade Mountains have already become famous as berry growing districts. Probably nowhere in the United States do these fruits grow to a higher degree of perfection than in these districts. With the opening up of large tracts of land for orchard purposes comes the demand for an early yielding, highly profitable crop that can be grown among the trees without danger of injuring them, and so for this reason large acreages of these plants are annually being planted in many parts of the state.

While raspberries and blackberries are more or less cosmopolitan as to their likes and dislikes of soil, yet they prefer a deep, rich, moist (but not wet), sandy loam, abundantly supplied with humus and nitrogen plant foods. However, they can be successfully grown on basaltic and volcanic ashy soils after humus has been added, provided there is sufficient moisture during the growing and fruiting season. Some of the soils of the irrigated sections of the state are not adapted to these fruits until one or more

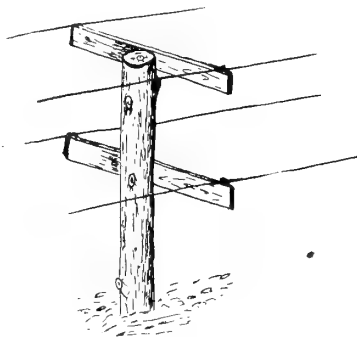
feeding roots of the plants. The summer tillage should be shallow, but frequent, and continue regularly until the crop is safely harvested, and afterwards only frequent enough to maintain growth and keep the suckers and weeds down.

The perishable nature of berries make them one of the most difficult fruit crops

as disadvantages, and if not crowded either will give good results. The hill system affords the best opportunities for cultivation, air drainage, sunlight on all sides of the plants and ease of harvesting the crop, while the continuous row system permits the planting of more plants per acre without serious crowding.

The "upright growers" may be profitably planted according to either system, but "viny growers" must be grown in hills or they become a dense hedge, making satisfactory harvesting an impossibility.

The one common fault of practically all amateur fruit growers is the over-planting of their land. The fertility of the soil, annual rainfall or irrigation, and variety materially govern the distance apart plants should be planted. On the rich moist soils of Western Washington, where heavy growth is a certainty, or dry soils of Eastern Washington, where the conservation of the moisture must be practiced, the "upright growers" should be planted not closer than six feet apart each way in the hill system, or three by eight in the "continuous row" system. In irrigated sections, where moisture can be supplied at will, the plants may be



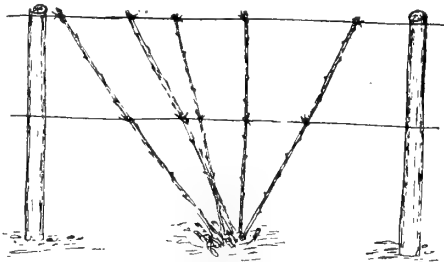
BEST FORM OF SUPPORT FOR WINE-PRODUCING SORTS OF GRAPES

to market that is commonly grown. However, if they are picked just as they are turning red, taken at once to the packing or cooling shed and handled with reasonable care they will be in their prime in from twelve to twenty-four hours. Berries picked in the morning ship better than those picked in the heat of the day, and under no circumstances should fruit be picked when the leaves of the plants are wet with dew or rain.

Where berries are not grown in sufficient quantities to warrant the use of refrigerator cars the Pony refrigerator should be used. Overripe fruit should be consigned to the cannery, and never be permitted to be sent to any distant markets.

The difference in the growth of varieties makes it necessary to use different plans to get the best results for all varieties.

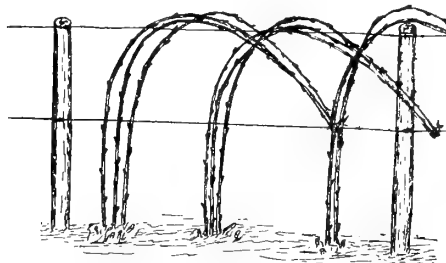
For the convenience of this discussion I group all of these fruits into two classes, i. e.: "Upright growers," or such plants as produce erect canes, and "viny growers," or such plants as the Logan and Phenomenal berries, and Evergreen,



GOOD WAY TO SUPPORT THE CANES OF SMALL FRUITS IN WINDY LOCALITIES

Himalaya Giant and Early Mammoth blackberries, which produce long prostrate vines or canes.

The two general planting plans: "hill" and "continuous row" systems are about equally used in the commercial fields of the state. Each has advantages as well

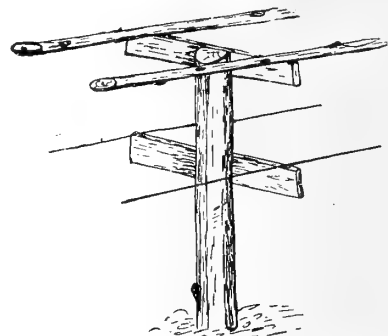


ONE WAY OF HANDLING TWELVE-FOOT CANES OF RED RASPBERRIES

crops of green manure have been plowed under.

One of the essential features of a good berry soil is thorough drainage, not only during the growing season, but also during the winter months. Soil that becomes saturated with water and so remains for even a short time is not adapted to berry culture, and should not be used until artificial drainage has been provided. Much trouble from root rot and root fungus can be avoided by providing good drainage. The factor of air drainage should also be considered in the making of a berry plantation. Good air drainage minimizes the danger of late spring frosts and materially lessens the injuries caused by some of our plant diseases.

Nothing can take the place of good, thorough tillage in the berry patch. A heavy mulch may keep down the weeds and hold the moisture, but it does not liberate plant food like cultivation. The spring cultivation should start as soon as the soil is dry enough to be worked, and should be deep enough to loosen up the soil, yet not so deep as to injure the



GOOD FRAMEWORK FOR SUPPORTING CANES OF RED RASPBERRIES

planted closer. However, it is not advisable, since what may be gained in additional number of crates per acre is frequently lost by the grade or quality of the fruit. On similar soils the "viny growers" should be planted in rows eight feet apart, and the plants from sixteen to twenty-four feet apart in the row, using the alternate system, and thereby affording a greater feeding area for the roots of each plant.

The "upright growers," where planted in hills, can best be staked by a single strong stake, from four to six feet in height, and the canes loosely, but very securely, fastened to the stake. Some growers prefer to set two stakes about fifteen inches apart at each hill of blackberries with the idea of training the fruiting canes on one and the growing canes on the other. Where the "upright growers" are planted in a continuous row they may be trained to and supported by a two-wire trellis, consisting of a single row of posts four to five feet high with a single No. 10 wire stapled to the top, and another from eighteen to twenty-four



# Do you know

**that** anticipating the future needs of the richest section on earth, we are now offering the most complete stock ever offered in fruit trees, nut trees, ornamental trees and shrubbery, both fruit and ornamental.

We can use at least one energetic, responsible salesman in each of the six most western states.

**Capital City Nursery  
Company  
SALEM, OREGON**

# HOMER G. DAY LAND ——— INVESTMENTS

Choice  
White Salmon  
Apple Lands  
at  
Reasonable Prices  
in  
Large and Small  
Tracts

**HOMER G. DAY**

Successor to Day Brothers

WHITE SALMON, WASHINGTON

inches from the top. The more common method, however, is to set a single line of posts four or five feet high in the row, nail an eighteen-inch cross-arm three feet from the ground and another at the top of the posts, and to the ends of these arms staple heavy wires, thus forming firm lateral supports for the canes.

The four-wire trellis, with the addition of notched cross pieces to lay on the lower wires, makes an excellent support for the "viny growers," the purpose being to suspend the growing canes by means of small cloth strings under the upper wires for the first year, and at pruning time lower them to rest on the notched pieces on the lower wires for their fruiting period. This makes an easy system to work and keeps the growing and fruiting canes separate, thereby simplifying the picking.

In sections where there is danger of winter injury the old fruiting canes should be left until spring, while in other sections they may be removed and the plant cleaned up immediately after they are through fruiting. The cutting back of the tops and final thinning of the canes should be done late in the winter or early in the spring, after all danger of winter injury is past. The "upright growers" should be cut back to sound wood from three to five feet in height, while the "viny growers" should be cut back to canes from six to twelve feet in length, depending upon their condition and strength.

The number of canes to be left per plant must be determined largely by the

variety and the vigor of each plant. Strong upright plants will support from four to seven canes, while weak ones should not be expected to support more than two or three. Four canes per plant is the most satisfactory number for the "viny growers."

The following varieties have been thoroughly tested in the station gardens and found worthy or unworthy, as indicated in these brief notes:

**Red Raspberries:** Cuthbert—One of the oldest and most reliable, strong growing, midseason varieties, producing large crops of firm, medium sized, good shipping berries of fair quality. Its deep rooting habit makes it possible for it to withstand severe drouth as well as cold winters. **Crimson Beauty**—A strong, erect grower, producing large crops of medium sized, rather soft berries. Good for home use, but too soft for shipping. **Improved Superlative**—A very popular, strong growing variety with deep rooting habit, producing large crops of firm, dark crimson berries. Good for shipping as well as for home use. **Marlboro**—An old, well known variety adapted to Western Washington conditions, but too much subject to sunburn for Eastern Washington. A strong grower, heavy yielder and a good shipper of good quality. **Philadelphia**—A good early season variety that can be used for home use, but the fruit is too small and soft to be of value for commercial purposes. **Red Antwerp**—A well known standard commercial sort, producing large crops of dark red, fine quality, good shipping berries. Valuable for Western Washington, but rather tender for Eastern Washington. The plants are subject to root trouble, which makes great care necessary in the selection of new, clean stock. **Ruby**—An almost unknown new sort, which gives promise of soon becoming one of our best commercial sorts. The plants are strong, hardy and productive, while the fruit is large, of good quality and color and ships well. **Turner**—A good early, home-use berry, but too soft for commercial use. The plants are strong, productive and free from insect pests.

**Yellow Raspberries:** Caroline—A rank grower, good yielder and hardy plant, but the fruit is rather small and too soft to be of value. **Golden Queen**—A strong growing, hardy, old, well known yellow fruited sort, producing good crops of fine large berries. Not popular on account of their color.

**Black Raspberries:** Gregg—One of our best and most popular black sorts. Valuable for home as

well as commercial growing. **Kansas**—An old, well known variety, but not adapted to our conditions. Valuable only as an early sort. **Burkhart**—A comparatively new, unknown sort, which promises to become very valuable for both home and commercial growing. **Ohio**—An old, well known sort, especially valuable for canning and evaporating purposes. While strong and vigorous, it is not generally productive in Washington.

**Blackberries:** Early Mammoth—An early, fine large, rich flavored berry, rather tender for general planting, but valuable where quality is desired. **Evergreen**—One of our hardiest, most productive and best all-around late blackberries. Valuable for commercial as well as home growing purposes. **Himalaya Giant**—A rather slightly known, productive, rank growing, viny sort. Valuable for commercial planting west of the Cascade Mountains, but too tender for general planting. **Kittatiny**—A very commonly planted sort, and while rather tender and subject to rust, yet produces very satisfactory crops. **Snyder**—One of our best and most popular early sorts. Valuable for commercial as well as home purposes. **Stones Hardy**—An old, well known, late variety. Valuable only where the more productive sorts will not stand the winters.

**Loganberry**—One of our newer fruits which is rapidly becoming popular on account of its productiveness, large fruit and fine quality. Grows well in all parts of the state, but requires light winter protection in Eastern Washington.

**Phenomenal Berry**—A fruit closely resembling the loganberry and profitably grown under the same conditions.

**Lucretia Dewberry**—A valuable but not well known recent addition to the blackberry family. While it is hardy, its trailing habit makes it possible to successfully grow this plant, by giving it winter protection, where the ordinary blackberry winter kills. Its early fruiting habit, productiveness and ability to thrive on many soils makes it popular as an orchard filler in many parts of the state.

## Market Gardeners' Paper

Weekly Market Growers Journal—only paper printed especially for vegetable growers. \$1.00 a year, 52 issues. For 10 cents and names of three market gardeners we will send it ten weeks with our popular booklet, "25,000 a Year From Twelve Acres." Send for free sample copies—it is the best way to judge.

MARKET GROWERS JOURNAL

546 Walker Building, Louisville, Kentucky

# SHASTA LIMITED



THROUGH SERVICE DAILY BETWEEN SEATTLE,  
TACOMA, PORTLAND AND SAN FRANCISCO

*via the*

Oregon-Washington  
Railroad & Navigation Co

*and*

## Southern Pacific Company

"Road of a Thousand Wonders"

Luxurious equipment, high-class dining service, entertaining scenery en route, and all the pleasing features that go to make travel easy.

*Special round trip fare from Portland to Los Angeles \$55* with corresponding low fares from all other points in Oregon and Washington. Liberal stop-overs in either direction, with final return limit six months. Ask any local agent for attractive booklets describing the beauties of California, or write to

WM. McMURRAY, *General Passenger Agent*  
PORTLAND, OREGON

## FLUCTUATING CHARACTERISTICS OF THE APPLE

BY C. H. GOETZ, WASHINGTON AGRICULTURAL COLLEGE, PULLMAN

IN taking up the study of fluctuating characteristics in apples, the intention was to show in how far there was a fluctuation of characteristics in apples.

In the fall of the year, as the apples ripened in the orchard of the Washington State College, there was gathered from the trees of fifty different varieties of apples, enough fruit to make one hundred apples of each variety, for use in the investigation. These apples were taken promiscuously from the trees. They were stored in boxes in the cold storage, each box being marked with name and number.

During the winter the apples were cut up for investigation and study. One-half of them were cut lengthwise for a study of the longitudinal outline form, for size, shape, form and size of tube, for shape of core line, depth, size and form of cavity and basin, for position of stamens and length of stem.

The other half of the apples were cut into cross sections for the study of the core lines or fiber vascular bundles, for size, shape and nature of cells, for cross-section outline, for position, form and nature of core.

These halves of the apples were as near as possible true halves. They were inked with indelible pencil on the face in such a way as to have them make clear cut and true impressions of the form and various characteristics of the apple as they were pressed upon paper.

Two impressions were made. The first impression was made on an absorbing paper, making a very strong impression.

This was used for making a tracing of the apples. The second impression was made on a fine grained paper, to be used for further study. For further investigation photos or blue prints were made from the tracings.

The investigation of the fluctuating characteristics of apples brings out the following:

First. That there is a more or less fluctuation in certain characteristics, and that this is true more of certain varieties of apples than of others.

Second. That certain varieties of the apples show a tendency toward a constancy of characteristics, while others have a tendency to great fluctuation.

Perhaps the most fluctuating characteristic in all apples is found in the size, shape and appearance of the cells. Second to this comes the fluctuation in length of the stem in a variety. Third in line of fluctuation is the form and outline of the apple, and with this the core line. Fourth in rank of inconstancy is the tubes, while the stamens, basin and cavity fluctuate least.

As far as could be observed there is very little fluctuation in shape, size or form of the calyx in any one variety of apples. In general, while there are no two apples formed alike in any one variety, yet there is a certain similarity running through one variety that makes them look alike.

In the following table is shown the characteristics of each variety studied as to its fluctuations or constancy. No. 1 standing for constancy, No. 2 for fluctuation:

	Cells	Size	Form	Cavity	Basin	Stem	Tube	Core Line	Stamens	Core	Calyx
1, Janet, 1693	2	1	2	1	1	1	2	2	1	1	1
2, North Carolina, 1441	2	1	1	1	1	2	2	1	1	2	1
3, Pickapoo, 942	1	2	2	1	1	2	1	2	1	2	1
4, Smith, 1775	2	2	2	2	1	2	1	2	1	2	1
5, Limber Twig, 936	2	1	1	1	1	1	2	1	1	1	1
6, Houghtaling, 1067	2	1	2	1	1	1	1	2	1	2	1
7, Ortle, 1166	1	1	1	1	1	2	2	1	1	1	1
8, Rock, 1542	2	1	1	1	1	2	1	1	1	2	1
9, Jones, 1203	2	1	2	1	1	2	2	2	1	1	1
10, Gold Ridge, 1583	2	1	2	2	2	1	1	2	2	2	1
11, Agrippa, 1111	2	2	2	2	2	2	2	2	1	1	1
12, Nancy Jackson, 1224	2	2	2	1	1	1	2	2	1	2	2
13, Shackleford, 1317	2	1	2	2	1	2	2	2	1	2	1
14, Black Warrior, 1537	2	1	2	2	1	2	2	2	1	2	1
15, Nelson, 1402	1	2	2	1	1	2	2	2	1	1	1
16, Huguenot, 1715	2	1	2	1	1	1	1	2	1	2	1
17, Goin, 1709	2	2	2	2	2	1	2	2	2	2	1
18, Gill, 1721	2	2	2	1	1	2	1	2	1	2	1
19, Duncan, 1259	2	1	1	2	2	2	2	2	1	1	1
20, Stark, 1497	2	1	2	2	1	2	2	2	1	2	1
21, William's Early Red, 949	2	2	2	2	1	2	1	2	1	2	1
22, Stone's Eureka, 1037	2	1	2	1	1	1	1	2	1	2	1
23, Nansemond, 1083	1	1	2	1	1	1	2	2	1	1	1
24, Black Annette, 1382	2	1	2	1	1	2	1	2	1	1	1
25, Fink, 1125	2	1	1	1	1	1	2	1	1	1	1
26, Stayman, 868	2	1	2	1	1	2	2	2	2	2	1
27, Kinnaird, 870	2	2	1	1	1	1	1	1	1	1	2
28, Red Siberian Crab, 978	1	2	1	2	2	2	1	2	1	1	1
29, Andrew's Winter, 1523	2	2	2	1	1	2	2	2	1	2	1
30, Crotts, 1267	2	1	1	1	1	1	1	1	1	1	1
31, Red Romanite, 1501	2	1	2	1	1	2	2	2	1	1	1
32, Yates, 1227	2	1	2	1	1	2	2	2	1	1	1
33, Belmont, 1677	2	2	2	1	1	2	2	2	1	1	2
34, Vanoz, 1714	2	1	1	1	1	1	1	1	1	2	1
35, Marshal, 971	2	1	2	2	1	1	1	2	1	2	1
36, Arabka, 1874	2	2	2	1	1	2	2	2	2	2	1
37, Plumb Cider, 1459	2	2	1	2	2	1	2	1	2	2	2
38, Latah, 1378	2	2	1	1	2	2	2	1	1	2	1
39, Hiley Eureka, 16—	2	2	2	1	1	2	2	2	2	2	2
40, Bombshell, 1659	2	2	2	2	2	2	1	2	2	2	1
41, Rome Beauty, 612	2	1	1	2	1	2	1	1	1	2	1
42, Indiana Favorite, 1735	2	1	1	1	1	1	2	1	1	2	1
43, Lawver, 1007	2	2	1	1	2	2	2	1	2	2	2
44, Fallenwater, 10—	2	2	2	2	2	2	2	2	1	2	2
45, Lankford, 1313	2	2	2	1	1	2	1	2	1	2	1
46, Lake Winter, 611	2	1	2	2	2	2	1	2	1	2	1
47, York Imperial, 1036	2	2	2	1	1	1	2	2	1	2	1
48, Loy, 1462	2	2	2	2	2	1	2	2	1	2	1
49, Superior, 1529	2	1	2	2	1	2	2	2	1	2	1
50, Longevity, 1578	2	2	1	1	1	2	1	1	1	2	1

In conclusion it might be said that the investigation, if it were continued with all the different varieties of apples that we have, would bring out the same facts as has been brought out in the study of these fifty varieties.

There is a slight possibility that where only one variety is grown in an orchard there may not be such a great tendency toward fluctuation of characteristics as there would be in an orchard like the State College of Washington orchard, where there are hundreds of different varieties of apples.

**SPRAY** COMPLYING WITH THE INSECTICIDE ACT OF 1910  
IT WILL PAY YOU TO USE EITHER

**ARSENATE OF LEAD**  
PASTE OR POWDERED  
FOR ALL LEAF EATING INSECTS  
RESPONSIBLE DISTRIBUTORS AND AGENTS WANTED

**KEY BRAND**  
RIGHT PRICE AND MATERIAL  
FUNGICIDE AND INSECTICIDE  
USE

**BORDO LEAD**

**INTERSTATE CHEMICAL CO.**  
11 BAYVIEW AVE., JERSEY CITY, N.J.  
WRITE FOR PRICES, CIRCULARS ETC. CORRESPONDENCE SOLICITED.

**BALFOUR, GUTHRIE & CO.**  
Distributors for Oregon

## WHOLE ROOT TREES

Are the only kind to set. Now is the time to make arrangements for your next fall's requirements. We have a large, full line, and ask that you correspond with us.

**CARLTON NURSERY CO.**  
CARLTON, OREGON

## BETTER FRUIT

Has no peer in the Northwest.

And so we have established

## The Fruit Journal

along similar lines in behalf of the great irrigated fruit districts of the Rocky Mountain region, a companion paper to this, your favorite fruit magazine.

We have made it up-to-date, clean, high class editorially, mechanically and pictorially.

The subscription rate is \$1.00 per year. It is worth it.

**THE INTERMOUNTAIN  
FRUIT JOURNAL**

Grand Junction, Colorado

# VIRGINIA

APPLE LANDS \$40 PER ACRE. WARRANTY DEED AND ABSTRACT

ORCHARD TRACTS 10 TO 40 ACRES ADJOINING HUSTLING CITY OF WAYNESBORO  
On TWO railroads, 4 hours from Washington, D. C., 10 to New York City

**FREIGHT RATE IS 8½ CENTS TO NEW YORK CITY ON BUSHEL BOX OF APPLES**

Proved soils, growing Stayman Winesaps, Newtown Pippins, Grimes Golden, Winesaps, Yorks and Delicious. Excellent grape soil, and grows all garden vegetables. This land is practically FROST PROOF. Labor plentiful.

## OUR APPLE TREES BEAR IN FIFTH YEAR

Excellent drainage, mild, dry climate, abundance of pure water, absolutely healthy, white population, high schools, electric lights, telephones, good home market, rural delivery, two national banks.

You get the FACTS in our illustrated Booklet, free for the asking.

**SHENANDOAH VALLEY APPLE LANDS CO. (INC.)**

FIRST NATIONAL BANK BUILDING

WAYNESBORO, VIRGINIA

## THE WASHINGTON STATE ANNUAL CONVENTION

AT the annual convention at Prosser of the Washington State Horticultural Society District Fruit Inspector C. L. Whitney, who was a delegate, delivered one of the principal addresses. His subject being, "The Show Ring." He said in part:

"We are living in a busy, progressive and commercial age. Advertising is an art. We must catch the eye of the passerby and please his taste before he will give up the almighty dollar. We must advertise our fruit and our section of country. How can we do this better than by entering the 'show ring,' and using apples for the purpose. 'By their fruits ye shall know them.'

"There are many beautiful and fruitful valleys in the great Northwest which have already been made famous by the red apple. Among these I will just mention Hood River, Rogue River, Wenatchee and the Yakima Valley. Each one of these valleys is modern up-to-date gardens of Eden. But the beautiful Walla Walla Valley is the original garden of Eden, for does not the good book say, 'And the Lord God planted a garden eastward in Eden and there He put the man He had formed.' Behold, Walla Walla lieth eastward from Hood River. And, again, in that garden of yore all things grew to perfection. The earth brought forth everything necessary for man, without his labor in plowing or sowing. Perpetual spring reigned—flowers sprang up without seed (just like ours).

"Roses bloomed in fragrance and profusion (just like ours).

"In the tree tops sang the birds of Paradise.

"Orchards blossomed and bore fruit for the gods, with a single spraying. "Rivers flowed with milk and wine, and sweetest honey was distilled from apple blossoms (just like ours).

"Our valley is blessed with abundance of water, lots of cows and whole swarms of bees and vineyards galore.

"In the midst of that garden grew an old apple tree with fruit fairer than the rest. (It may have been a Roman Beauty, for all I know.) Anyway, the apples were large, highly colored, extra fancy, and caught Father Adam's eye at first glance, then down went the fruit, and so you see the apple was the first great advertiser.

"Apples do not only attract attention by their beauty, but they advertise the climate and soil by their size and color.

"All things are judged by comparison, and when apples from the states of Washington, Oregon and Idaho are put in the 'show ring' alongside of apples from Maine, Vermont and Rhode Island, and apples from British Columbia, Montana and Colorado, with apples from Nova Scotia, New York and Michigan ours loom up with undiminished luster, and tell in silent language of a land that is 'fairer' than theirs.

"I find the 'show ring' is good for another purpose—that of putting pride and ambition into our own people.

IF YOU WANT TO KNOW ABOUT

## OREGON

SUBSCRIBE FOR

**The Chamber of Commerce Bulletin**

The largest commercial magazine in the West

Devoted to upbuilding Oregon and the Pacific Northwest

SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

**The Chamber of Commerce Bulletin**

DAVID N. MOSESSEHN, Publisher

Suite 616 Chamber of Commerce Building  
Portland, Oregon

## SLOCOM'S BOOK STORE

**Office Supplies  
Stationery**

**Ledgers, Journals, Time Books**

**Memorandum Books**

**Rubber Stamps**

**Souvenir Postals**

**Picture Frames**

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

When we enter into friendly competition with our neighbors from other fruit growing sections at fruit fairs and national apple shows we always learn something, and, whether we win or lose, we go back home wiser and with a firm determination to do better next time.

"Talking about apple shows, why not get up a world's apple show and have apples from every country that grows, or think they can grow apples. In place of holding it a week hold it for a month or two. Make it an educational as well as an advertising feature. Have a regular apple school, lectures and demonstrations from practical fruit growers. Packing contests, pruning contests, marketing problems and many other important subjects. It was a herculean task to get our people to enter the 'show ring,' but when our commercial club put up the money to defray all expenses it was dead easy, and now that we carried off the gold medallion banner at the Third National Apple Show at Spokane we are feeling like Alexander the Great, sighing for more worlds to conquer.

"Our commercial club gave a cash prize of \$50 to the merchants of Walla Walla who made the finest display of apples in their windows. Some twenty stores, or more, were beautifully decorated with that king of all fruits. Passersby never failed to stop, look and exclaim, 'Oh, you apple.' In one store apples and diamonds were placed side by side and the apples attracted the greater attention. In another store apples were on display beside the finest millinery. Even bonnets of the newest and latest creation could not detract from the big red apple. This, our first attempt to decorate the stores with apples, being such a success it was planned to hold an apple carnival each year in Walla Walla, and decorate every business house in our city with apples of scarlet and gold.

"While ours is the garden city, it is fast becoming the 'apple city.' Thousands of acres of wheat and alfalfa land are being planted to commercial apple orchards, and in a few years we hope to be placed on the map, and then we will get into the 'show ring' in dead earnest.

"When we enter the 'show ring' we must not only have apples of uniform size and high color, but also the finest of flavor. There should be a tasting committee as well judges at every apple show.

"Apple eating contests would open up a larger market for our apples. We must try and increase the consumption to keep pace with the much talked of over-production. One way to do this is to educate the people to eat more apples.

"Why not get up a train load of prize apples; let each section donate a carload and take them back East to be given away where they will do the most good for advertising purposes. I have no doubt the railroads would transport them free, and the commercial clubs would raise what money was necessary for advertising them in the East. The 'Northwest Red Apple Limited' would be one of the greatest drawing cards from an advertising as well as a business

# CREATION



The tone is the Jewel.  
The case is the Setting.  
The combination is the  
Steinway—the Perfect  
Piano.

HE who is blessed with the power to create is blessed with God's greatest gift to man, and if he uses that power to increase the happiness of his fellow men he becomes a benefactor to the human race.

The world owes homage to the men who have devoted their burning energies to the consummation of one purpose, to the final and most perfect development of an ideal.

## The Steinway Piano

Is an example of the grand result of years of persistent, purposeful striving after the very highest musical ideal. Sons have taken up the task where fathers left off, so that alternate generations of genius, working through the finest piano factory in the world, have evolved the Steinway—a piano that has long since been acknowledged the musical masterpiece of the ages.

Priced at \$575, \$625, \$775 and up to \$1,600. Of course you can buy a piano cheaper, but it will be a cheaper piano. Why not get the best?

VICTOR TALKING  
MACHINES and  
SHEET MUSIC

 **Sherman, Clay & Co.**  
SIXTH AND MORRISON  
PORTLAND, OREGON  
Exclusive Steinway Representatives

## A Limited Number of the Automatic Wallace Peerless

Power Sprayers can be had for immediate delivery on favorable terms. These are the machines which regulate both pressure and load. Have no equal for efficiency and reliability. Write or wire for prices and name of nearest agent.

AMERICAN SPRAYER CO.  
Minneapolis, Minnesota

J. D. WALLACE, Portland, Oregon  
Western Sales Agent

standpoint. The East would know us better. They would see and taste our juicy apples. Short talks could be given and pictures thrown on canvas, literature handed out, and the goods would be right there to speak for themselves. The big red apple, that king of all fruits, from the great Northwest, to which we all take off our hats and hurrah."

## RICHLAND NURSERY

Richland, Washington

### FRUIT TREES

Complete stock of leading varieties of Apples, Pears, etc.

WRITE US FOR PRICE LIST

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



## A BRIEF RESUME OF THE STORAGE SITUATION

From "The Spy," Organ of the Apple Shippers' Association

AT the last convention it was ordered that the matter of storage of apples in transit be vigorously pressed by the association and that sufficient funds be granted to meet the accounts, expenses to be first approved by the executive committee. The work was taken up by the transportation committee and a special sub-committee appointed with E. N. Loomis as chairman and John B. Frey, N. G. Gibson and W. J. Henry as the other members. A conference was then arranged between this association, the Western Fruit Jobbers' Association and the National League of Commission Merchants. As a result of this meeting a special conference committee representing these associations was organized, consisting of E. N. Loomis, N. G. Gibson, W. D. Tidwell, J. E. Stewart, R. E. Hanley, W. E. Jones, and H. J. Shifferle of No. 131 South Water street, Chicago, as secretary.

It was then determined to submit this proposition to the Transcontinental Lines Freight Bureau and individual lines interested, with a request that the privilege be made applicable in time to move the apple crop of 1911. In accordance therewith proposed rules were formulated for the protection of the railroads as follows:

"Apples, carloads, from any point shown in tariff, may be shipped to any intermediate point, placed in storage, and 19829—BetFrt Moulton 3-22-11 Gal. 63 afterward reconsigned on protection of

through rate, under following provisions:

"A—The storage point must be an intermediate point in the same general direction between point of origin and final destination, except that no charge for back haul will be made, when ultimate destination is in the same general direction, or storage point is in territory intermediate via any route from point of origin to final destination.

"B—Storage must be in warehouse furnished by shipper, or owner of property. The carrier not to assume charges for storage, insurance, or other expense accruing at warehouse.

"C—Shipments entitled to storage in transit privilege shall have their expense bills at the storage station stamped, 'To be stored in transit.'

"D—The surrender of paid expense bills, accompanied by warehouse certificate identifying said shipment, will be a declaration by the shipper that said shipment is entitled to transit privilege.

"E—Shipments may be stored in

transit for a period not exceeding nine months, but in no case is privilege to be extended beyond July 1 following.

"F—Upon surrender of paid in-bound expense bills, shipments will be rebilled from storage point to final destination, plus a switching charge not to exceed \$5.

"G—The through rate in effect on date of shipment from point of origin shall be the rate to be protected."

Much work has been done by this committee and as a result the number of associations working for the privilege is continually increasing, and the railroads themselves have taken an increased interest in the matter. The central freight committee, located at Chicago, has voted in favor of granting this privilege. This committee acts in an advisory capacity to the Central Freight Association, comprising all the transcontinental lines entering Chicago, and from this center the movement would be expected to extend to the transcontinental lines entering New York. In addition, prominent banking interests on the Pacific Coast are actively at work urging the Western lines to grant this relief.

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

### HOOD RIVER BANKING AND TRUST COMPANY HOOD RIVER, OREGON

CAPITAL STOCK \$100,000 SURPLUS \$20,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, *President*  
J. W. HINRICKS, *Vice President*  
E. O. BLANCHAR, *Cashier*  
V. C. BROCK, *Assistant Cashier*

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

Savings Bank in connection

LESLIE BUTLER, *President*  
F. MCKERCHER, *Vice President*  
TRUMAN BUTLER, *Cashier*

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000 Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - - \$1,000,000  
Surplus and undivided profits - - - - - \$600,000

Officers:  
W. M. Ladd, *President*  
Edward Cookingham, *Vice President*  
W. H. Dunckley, *Cashier*  
R. S. Howard, Jr., *Assistant Cashier*  
J. W. Ladd, *Assistant Cashier*  
Walter M. Cook, *Assistant Cashier*

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

# PRINTING FOR FRUIT GROWERS

Our facilities for the prompt handling of out-of-town orders, together with the high-class service we render, makes this a good place to buy Printing. *Better Fruit* is designed and printed in our establishment. Long Distance Telephone Main 165.

## F. W. BALTES & CO.

FIRST AND OAK PORTLAND, OREGON

## Apple Land at Mosier, Ore.

In the Hood River district, may be had for from \$75 to \$125 an acre for raw land, and is absolutely the best land for the money to be had in the Pacific Northwest.

Improved land here may be had at equally low prices.

Mosier apples bring the very highest prices paid for apples in the United States, and this is a PROVEN district in every respect.

For further information address or see

D. D. HAIL, MOSIER, OREGON

No trouble to answer questions.

It is conceded that within a few years the states of the Northwest will have to market 100,000 cars of apples annually, as against the 15,000 cars at the present time. This is a tremendous increase and presents a problem difficult to solve.

Some of the reasons why this storage in transit privilege should obtain are given in the words of Mr. Loomis as follows:

"The great trouble with the movement of the crop of box apples in a satisfactory way has been the lack of facilities for distribution. The crop is moved in a month and a half; it requires nine months of the year to consume it; storage facilities must be provided at the most favorable points to hold this crop during that period of time and to allow it to go to any market that most needs the supply. At the present time the box apple crop is congested at Chicago and New York and no efforts are being made to increase the consumption of box apples at other cities. According to the proportion of wealth, half the box apple crop should be consumed in the East between Chicago and New York. At the present time only one-quarter of the crop is being there consumed. The granting of this privilege would particularly stimulate the demand in the many large cities between Chicago and New York. It would greatly benefit the railroads in an increased amount of traffic, especially on the Eastern lines between Chicago and New York, probably to the extent of a million dollars annually. It would also greatly benefit the growers of box apples in providing a systematic scheme of distribution; it would allow their crop to be marketed where it is most wanted and also by scattering it among the cities of the United States prevent a glut or congestion in any one market. It would in addition greatly help all the cold storage warehouses at all cities on transcontinental lines and would particularly place on a prosperous basis the warehouses at Chicago and those in Western New York. The latter would be assured of full houses on any short year. In addition, it would greatly help the apple industry. At the present time competition is concentrated in one or two sections. With this privilege capital would be induced to invest in box apples on equal terms with barreled apples, and thus it would be dis-

tributed throughout all apple sections, thereby tending to greater uniformity and stability."

As to expense, the three associations have each appropriated \$500. Several cold storages have also contributed. All interests to be benefited should be anxious to share the burden, on the principle of the "square deal."

## John B. Cancelmo

WHOLESALE DEALER IN

## FANCY BOX APPLES

127 Dock Street

PHILADELPHIA, PA.



**"THE FRIEND"**  
**"DRIVE SPRAY"**  
**NOZZLES**

Throw a fine spray 20 to 25 feet from the Power Sprayer.

Absolutely No Complications or working parts. Just as simple as they look. Made for heavy foliage, large trees, and spraying against the wind. Nothing to manipulate, catch, drip or clog. Only one needed for each lead. Satisfaction guaranteed or money refunded. Price (angle or regular, state which is wanted), \$1.00 each postpaid.

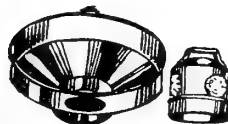
"FRIEND" MFG CO., Gasport, N. Y.  
Mfrs. of the world's best Hand and Power Sprayers, the "FRIEND"

## POULTRY AND FRUIT



One man made over \$18,000 last year—many others make a nice fortune from a few hens and a small piece of ground. But you must know how. American Hen Magazine tells how. It gives the secrets from A to Z in plain language. Subscription price 25 cents a year. Descriptive literature free.

American Hen Magazine Council Bluffs, Iowa



## Milk Cans That Wear

Milk Cans made of tinned steel plate. The kind that are inspected after every operation while in process of manufacture. The kind that stand the wear and tear and give satisfaction—the best. We are agents for both the **STURGES** and the **BUHL MILK CANS** because these makes are known to make good.

Send for special booklet.

**MUNROE & CRISELL**

Selling Agents

Portland, Oregon



## RESOLUTIONS AND RULES ON STORAGE IN TRANSIT

**A**T a conference of the authorized representatives of the Western Fruit Jobbers' Association, the National League of Commission Merchants of the United States and the International Apple Shippers' Association held in the La Salle Hotel, Chicago, on the 12th day of December, 1910, the following resolution was unanimously adopted:

"Resolved, that owing to the growing necessity for storage in transit of box apples from the West, to the end that a broader and more equitable distribution may be accomplished, thus fostering and protecting the industry, increasing the traffic and aiding the furnishing of equipment to move the crop, the appended rules governing such storage in transit of apples be submitted to the Transcontinental Lines Freight Bureau and individual lines interested, with a request that said rules be adopted in effect and such storage in transit privilege be made lawfully applicable in time to properly move the apple crop of 1911."

Apples—carloads—from any point shown in tariff may be shipped to any intermediate point, placed in storage and afterward reconsigned on protection of the through rate under the following provisions:

A—The storage point must be an intermediate point in the same general direction, between point of origin and final destination, except that no charge for back haul will be made when ultimate destination is in the same general direction or storage point is in territory inter-

mediate via any route from point of origin to final destination.

B—Storage must be in warehouse furnished by shipper or owner of property. The carrier not to assume charges for storage, insurance or other expense accruing at warehouse.

C—Shipments entitled to storage in transit privilege shall have their expense bills at the storage station stamped, "To Be Stored in Transit."

D—The surrender of paid expense bills accompanied by warehouse certificate identifying said shipment will be a declaration by the shipper that said shipment is entitled to transit privilege.

E—Shipments may be stored in transit for a period not exceeding nine months, but in no case is privilege to be extended beyond July 1st following.

F—Upon surrender of paid in-bound expense bills shipments will be re-billed from storage point to final destination at balance of through rate, if any, from initial point of shipment to final destination, plus a switching charge not to exceed five dollars.

G—The through rate in effect on date of shipment from point of origin shall be the rate to be protected.

◆ ◆ ◆

**R**ESOLUTIONS of committee of the Central Selling Agency for Northwest fruits:

Whereas, the greatest success of the important industry of apple growing in the Northwest demands that the present apple marketing season of one hundred days be extended to at least nine months; and

Whereas, to accomplish this, some plan must be inaugurated to get a considerable portion of our

apples direct from the orchard into cold storage; and

Whereas, the present and prospective storage in the orchard districts is entirely inadequate, and inadvisable for the reason that our apples must be moved through the Rocky Mountains before heavy freezing weather, and be nearer the consuming markets for distribution during winter months; therefore, be it

Resolved, that we urge and demand that a through rate allowing storage in transit be established, thus affording our industry the same privileges accorded others, notably the millers, who have a milling in transit rate, and the stockmen, who have a feeding in transit rate.

Resolved, that this meeting, representing the apple growers of the Northwest, appoint a standing committee of five to present our demands to the proper authorities and co-operate with other organizations now working to secure a storage in transit rate on apples.

## HEMINGWAY'S

Is the lead arsenate of the expert fruit grower. It is widely used in all of the famous fruit growing districts. Made in a factory which has specialized in arsenical manufactures for over 30 years, it has the advantage of this long experience in its preparation for the use of the discriminating fruit grower.

## Hemingway's Arsenate of Lead

## THE PERFECT PRODUCT

Possesses miscibility with maximum sticking power. Is 20% stronger than the federal law requires.

Send for booklet giving full directions for the use of Hemingway's Lead Arsenate against all biting insects.

KERR, GIFFORD & CO., Portland, Ore.  
Coast Agents, who carry full stocks

HEMINGWAY'S LONDON PURPLE CO.  
LTD.  
64-66 Water St., New York

## SEATTLE

Increased 194 per cent in population, according to Uncle Sam's last census. This is more than any other large city in the PACIFIC NORTHWEST.

## WASHINGTON

Leads all states of the Union in growth, having increased 120.4 per cent, according to the same authority.

If you want accurate information about Seattle and Washington, subscribe for

## PACIFIC NORTHWEST COMMERCE

The official publication of the Seattle Chamber of Commerce. Comes monthly, \$1.50 a year.

Address

## PACIFIC NORTHWEST COMMERCE

Suite 842 Central Building  
SEATTLE, WASHINGTON

## MCEWEN &amp; KOSKEY

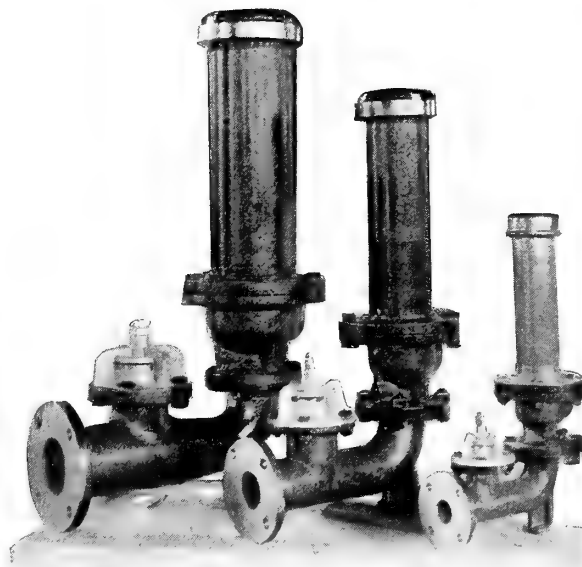
Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

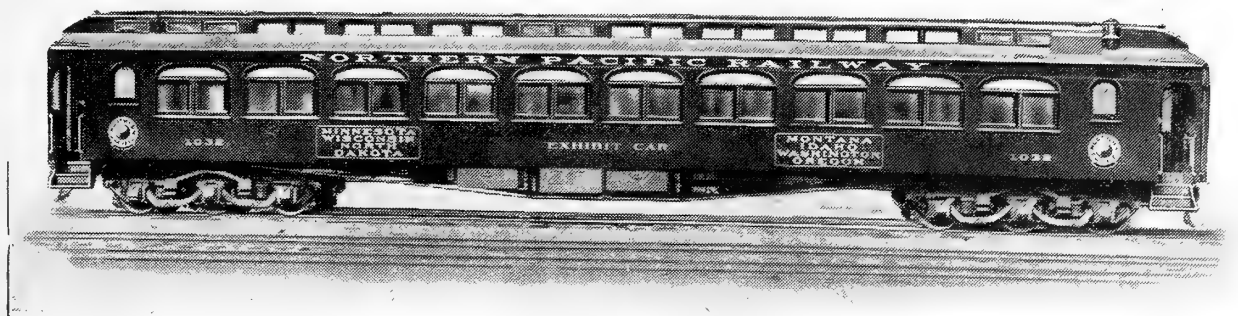
## Irrigation Economy



Means supplying water to your fields at the least cost consistent with an ample supply. If there is a spring or a running stream of water on your place you can utilize the power of this water to pump itself to where you need it. A Phillips Hydraulic Ram does the trick without a particle of attention from anyone after it is once in operation. It doesn't require oiling, even. Simple as can be; not a

single spring or any part that can get out of order. This ram is a modern wonder. Low first cost and no operating expense. Send for further information, stating how much water fall you have and the quantity. Give us all the information you can.

**PHILLIPS  
HYDRAULIC  
RAM CO.,** 419 Lumber Exchange Building, Portland, Oregon



## A MODERN TRAVELING AGRICULTURAL DISPLAY

**P**RACTICALLY ready to start on its ten thousand mile tour, resplendent in fresh varnish and polished brass, the Northern Pacific's Northwest exhibit car is "chock full" of evidence of the productivity and varied resources of the states along its lines: Minnesota, Wisconsin, North Dakota, Montana, Idaho, Oregon and Washington.

It is not at all a new plan to start out such a car, for the Northern Pacific several years ago equipped a similar car, which was on exhibition at the World's Fair in Chicago. This car afterwards made numerous tours, advertising the Northwest.

However, the new car which starts out at this time is of latest model, seventy-five feet long, lighted by electricity and acetylene gas, equipped with extra wide windows, six-wheel trucks and all other details of an up-to-date passenger coach.

It is an event long to be remembered, especially in a smaller town, for an exhibit car of this character to be pushed in on the siding and thrown open to the inspection of those who could in no other way see the products of the soil from such a wide range of territory as that lying between the Great Lakes and the Pacific Ocean. The fertile wheat and corn fields of Minnesota and North Dakota, the farms, orchards and gardens of Montana, Idaho, Washington and Oregon, have all contributed their share to a grand display which for excellence and diversity has never been excelled in any agricultural exhibit, either stationary or on wheels.

A great many of the exhibits in the car were secured from the Minnesota, North Dakota and Montana State Fairs, from the Dry Farming Congress recently held at Spokane, and from numerous county fairs held last fall in Washington and other state. By this method the Northern Pacific has secured a representative display from all these states such as has never before been assembled.

The itinerary of the car is being carefully worked out with a view to exhibiting it in those sections of the Eastern and Southern states from which thousands annually migrate to the Great Northwest beyond the Missouri River. The average Easterner, not inclined to think of the West beyond the Big Muddy as a vast region of cities, fields and farms where state boundaries merge in a sameness of agricultural landscape, will be

shown how attractive and how productive are the fields lying along the "Scenic Highway Through the Land of Fortune."

The car will be accompanied by representatives of the passenger and immigration departments of the road and by a lecturer who will give illustrated talks to supplement the exhibit. Literature will be liberally distributed to further acquaint Easterners with the great Northwest.

While chief interest in the car will be among the farming class, yet it is planned to make stops in the smaller towns to show those who labor at trades and in factories the advantages of outdoor life and independence on the orchards and farms along the Northern Pacific.

## THINGS WE ARE AGENTS FOR

KNOX HATS  
ALFRED BENJAMIN & CO.'S  
CLOTHING  
DR. JAEGER UNDERWEAR  
DR. DEIMEL LINEN MESH  
UNDERWEAR  
DENT'S and FOWNES' GLOVES

**Buffum & Pendleton**

311 Morrison St., Portland, Oregon

## DO YOU WANT

## A Home in the "Beautiful Ozarks"

OF MISSOURI, IN THE FAMOUS STRAWBERRY LAND?

Apples, Peaches, Grapes, Raspberries and Strawberries all grow excellently. Ideal location for the dairy and poultry business. We offer for sale 60,000 acres of land in 20-acre tracts or more, at from \$5 to \$10 per acre, on easy terms. Located in Stone and McDonald Counties. For further information address

**McDonald Land & Mining Co.**

Joseph C. Watkins, Manager

Rooms 301-2 Miner's Bank Building

JOPLIN, MISSOURI

## Spraying as Necessary as Plowing

Every orchardist must spray to protect his trees against insects that eat up profits. His best defence is the surest, safest, strongest insecticide made—

## ELECTRO Arsenate of Lead

(in Powdered Form)

*Surest and strongest* because it contains 50% more arsenic oxide than any other brand—32½ to 33% guaranteed. Our Electro process combines a greater percentage of arsenic with the *proper* amount of lead than can be obtained in any other brand. This means better adhesion; greater killing power, suspension and distribution.

*Safest* because there is less than ½ of 1% of water-soluble arsenic—the tenderest foliage is never injured.

For these reasons, Electro is most economical—less material need be used.

Tests by Conn. and N. J. Agri. Exper. Stations prove our claims. Send for these and for valuable folders on Electro Arsenate of Lead and on Electro Lime-Sulphur (certain death to San José Scale).

*If your dealer cannot supply, write for prices, proofs, and name of nearest distributor.*

**THE VRELAND CHEMICAL CO.**  
50 Church Street, New York





### UNIQUE SIGN MADE ENTIRELY OF GRAIN SEEDS

A UNIQUE feature of the exhibit material which the Northern Pacific Railway has assembled to place in its exhibit car which will tour the Eastern and Southern states is an immense trade mark of the company made out of grain seed. The accompanying picture will give some idea of the appearance of this symbol, the frame being six feet square, and the trade mark and lettering mounted on a background of green baize. The outer rim of the trade mark is a rope of straw. The lettering "Northern Pacific" is made of alfalfa seed, the background in the outer circle is No. 1 Northern wheat, the upper half of the "Monad" is red millet, the lower half is rutabaga seed,

the lettering "Yellowstone Park Line" and "Northern Pacific Railway" is timothy, the background of the lower panel is ground flax, and the lettering "Scenic Highway Through The Land of Fortune" is clover seed. Taken altogether, it is a most attractive piece of workmanship, the coloring being brought out in an ingenious manner. It took one man three weeks to make it.

Many other interesting and instructive exhibits of the products of Minnesota, North Dakota, Montana, Idaho, Oregon and Washington fill the Northern Pacific exhibit car to overflowing with "show me" evidence of the great fertility and varied resources of these states.

### "I HAVE SO LITTLE FUNGUS

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."

Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

**PRICES:** In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY

# Seeds

### THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street **J. J. BUTZER** Portland, Oregon  
Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread

Free Trip to Denver, Colorado,  
Any Time During Year 1911

To inspect The Altura Farms Company's 5, 10 and 20-acre irrigated tracts adjoining Denver.

### FRUIT, VEGETABLE AND POULTRY TRACTS

Sold 237 of these tracts in past year. Ask us for book, also say you want an order for the transportation; both will be sent you free of cost.

We absolutely have the best acreage proposition on the market.

Ask your banker to look us up.

**THE ALTURA FARMS COMPANY**  
210 Ideal Building, Denver, Colorado

### NURSERY SALESMEN

Drop us a line for information regarding our splendid proposition.  
Big commissions paid weekly.

OUTFIT FREE

**SALEM NURSERY COMPANY**  
SALEM, OREGON

## Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

**Stewart Hardware & Furniture Co.**  
22,000 feet floor space Hood River, Oregon



# HISTORY OF SPRAYING IN THE PAJARO VALLEY

BY C. W. WOODWORTH, EXPERIMENTAL STATION, BERKELEY, CALIFORNIA, AT WATSONVILLE APPLE ANNUAL

**T**HE magnificent display of this apple show justifies a feeling of pride in every Californian. These products represent not only the richness of the soil and the perfection of the climate, but testify even more to the enterprise, courage and faith of the people of this section of the state. For be it known that such results as have been attained in this valley represent the resolute facing of difficulties and the conquering of them. It is a high honor for any of us to have been associated in any way with the solution of the problems that have confronted these apple growers and to share even to a small extent in this triumph.

It is undoubtedly true that nowhere in the world is there an area planted to any crop to the extent of the apple orchards of this valley, where spraying is so universally and efficiently done, and there is no similar area where such difficulties had to be surmounted in order to place spraying on a practical basis. The story of the horticultural achievements of the Pajaro Valley will always include the contributions here made to the means of controlling the insect pests.

Just a quarter of a century ago I had the privilege of taking part, under the direction of Professor Forbes, in Illinois, in the first thorough scientific experiments made to test the efficiency of arsenicals in the control of the codling moth. This method has gradually been extended until now spraying with these substances has become an essential part of the practice of apple growing in every region which figures in the commercial production of this fruit.

Just twenty years ago Professor Wickson conducted the first experiments in spraying for codling moth on the Pacific Coast, and my first task on coming to the state was the preparation of the notes on these experiments for publication in the report of the experiment station. Spraying was not immediately taken up in the Pajaro Valley, though the codling moth had already reached this region, and wormy fruit became very prevalent. A few of the more enterprising orchardists finally began to

experiment with sprays, but could not obtain satisfactory results, though some of them continued their efforts year after year.

The conquering of the codling moth has been the work of the last eight years. Previous to 1903 spraying for the codling moth was not extensive enough to produce any appreciable effect on the apple market in this valley. Even today the good which can come from spraying is only a little over half realized. While we have a right to felicitate ourselves upon the progress thus far made—that this valley today leads the world in this phase of the fight for perfect fruit—let us realize that this pre-eminence can only be maintained by improving the spraying practice over the greater portion of the present acreage, bringing it in line with the best practice in the valley. Many orchards are today experiencing a loss from codling moth, notwithstanding their spraying work, of between 10 per cent and 20 per cent, while adjacent orchards, under identical climatic conditions, suffer a loss of less than one per cent. An insignificant increase in the cost of spraying would easily add two or three hundred cars of merchantable fruit to the output of the valley. As we recount the efforts and achievements of the last few years may we gain a renewed determination to permit no pause in this forward movement.

When the call for help was sent to the university in 1902 the staff of the entomological division consisted of a single instructor. With the funds contributed by the two counties he was enabled to bring into the field a corps of four assistants, all students of the university. All of these have made good. Mr. Clarke was shortly afterward called to Alabama as professor of entomology and later recalled to California as assistant professor of horticulture, and given charge of the Farmers' Institute work of the state. Mr. Kirkman has for years successfully managed a large nursery in the San Joaquin Valley. Mr. Hunter is the horticultural commissioner of San Mateo County, whose successful work against the mosquitoes of the

Milbrae marshes has been particularly notable, and Mr. Mitzmain did good service in the study of fleas in connection with the bubonic plague work in San Francisco, and is now in the government service in the Philippines, studying the insects associated with diseases of domestic animals.

With the aid of these young men we were able to carry on rather extensive experiments and to study the life history and habits of the insect.

The primary object of our work was to prove that the arsenicals were not inefficient, as those who had previously experimented in this valley had concluded, and the work was eminently successful in demonstrating this fact, though the spraying program generally recommended was found to be entirely inapplicable under the conditions existing in this valley. This success, however, was something like the successful operations we sometimes hear about in the hospitals in which the patient dies. The fact (entirely unanticipated, one that brings this region in striking contrast with all other sections where spraying for codling moth is practiced) that arsenicals, when used in the most approved manner and with all the known precautions, produced serious damage to the foliage when the necessary treatments are made to secure the fullest control of the insect. In one orchard particularly the loss was very much more than would have been produced by the codling moth had the orchard remained untreated. Long before the end of the season it was seen that the most serious problem was how to so apply the arsenicals that the foliage should not be damaged. On account of this development of the situation another man was added to the staff—another student—Mr. Volck, who had already done good service in another part of the state in the study of the injuries produced by oil in spraying citrus trees. He has remained with this problem now over seven years. To his ability and untiring effort and devotion more than to anyone else is due the splendid victory against the codling moth. His work was full of failures, but as soon as one thing failed he at once



*The Simplest, Easiest, Most Perfect*

## PICKING BUCKET

ON THE MARKET

Every piece of fruit that is picked without bruising is money in your pocket. A day's picking will pay for it.

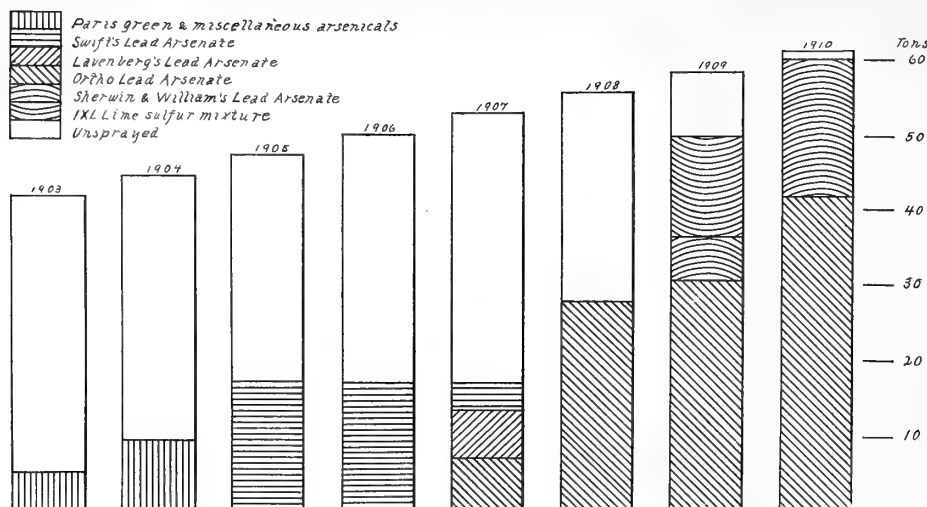
Price, \$1.50

Agents wanted at once, write

**PALMER BUCKET CO., Hood River, Oregon**

P. S.—Tomatoes, cherries, grapes and all tender fruit can be emptied from this bucket without a bruise.





tested another. He was never defeated, nor did he show discouragement. A man with less of the bulldog perseverance would not have succeeded, nor a man with less skill as an experimenter—less full of expedients. His first work seemed to point to success from a water-proofing of paris green, but the next season's spraying work showed this to be a failure, and paris green, which up to this time had everywhere been regarded as the standard remedy for codling moth, finally had to be discarded.

Mr. Volck's work in 1904 consisted very largely in testing out all the brands of arsenicals on the market, other than paris green, and particularly the lead arsenates. Despite the serious burning of some orchards in 1903 the results in codling moth control so pleased the growers that a considerably larger acreage was sprayed in 1904, and since most of this was with lead arsenate, and the season not particularly bad for burning, they became enthusiastic enough to spray about a third of the entire bearing acreage in 1905. The gradual extension of spraying is graphically shown in the accompanying chart.

The spraying in 1905 was almost exclusively with Swift's arsenate, since that had proven best in the experiments of the previous year. The results obtained during this year were the most disappointing of the whole conflict. While the codling moth was well controlled the amount of burning was so large that the progress of spraying was entirely checked. For three years there was no appreciable increase in the number of acres sprayed.

For this reason, in 1906, two more students were sent into the valley. Mr. Parker, who has just been appointed to a responsible position in the division of entomology of the United States Department of Agriculture, and Mr. Luther, who has remained in the valley, and who has been a very important factor in the final solution of the problem. During this year hundreds of arsenicals were made up and tested on foliage. The most significant discovery of the year 1906 was that where a lead arsenate was so compounded that all the arsenic acid

present was combined with lead no injury was produced on the most delicate foliage. Such a compound is known as a neutral, or Ortho arsenate of lead.

At that time no manufacturer was able or willing to produce an arsenate of lead of this description, and to this day, excepting the product manufactured here at Watsonville, there is no strictly neutral lead arsenate on the market.

Other apple regions have a climate permitting the use of ordinary arsenates of lead, or of paris green for that matter, but here the control of the codling moth, with safety to the tree, is absolutely dependent upon the use of the kind of lead arsenate now only manufactured at Watsonville. The manufacture of such an arsenical presents many practical difficulties, and normally would have cost more money than the common lead arsenate, but by the working out of new methods this material has been produced at a cost to the grower decidedly lower than that previously charged for

the ordinary lead arsenates, and this saving has turned back into the pockets of the growers much more than the investigation has cost. In 1907 Mr. Luther undertook the management of a factory incorporated as a private enterprise to produce this compound. In the neighborhood of six tons of lead arsenate was manufactured that year. About the same quantity of Lavenberg's lead arsenate and a smaller amount of Swift's was used. Both of these burned foliage much as in 1906, while the Ortho lead did no burning whatever; therefore, in 1908 there was practically no arsenical used other than the Ortho brand, and the area sprayed was greatly extended.

In 1909 still more territory was sprayed with the Ortho lead, and, in addition, a small amount with the Sherwin-Williams arsenate of lead. About a carload of the IXL mixture was also sold to orchardists upon the misrepresentation that it would be effectual against codling moth. This shows how easily otherwise intelligent farmers may be gulled, but it is not likely that any more of that product could be sold in the valley for several

## J. J. Olsen & Bro.

TACOMA, WASHINGTON

MANUFACTURERS

### Improved Folding Berry Boxes

5-pound Tin Top Baskets

Apple Boxes, etc.

Write for samples and prices.

# Malthoid Roofing

The dependability of Malthoid Roofing has been proven by special tests covering a period of many years.

Malthoid will last as long as the building it covers. It is inexpensive, easy to lay, and your roof troubles are over when Malthoid is laid.

Made by THE PARAFFINE PAINT COMPANY

San Francisco and Everywhere

Stewart Hardware & Furniture Co., Agents, Hood River, Oregon

IT'S FREE

Send for it.  
A new  
and valuable  
book on

Cheerful  
Homes

This booklet is  
illustrated  
with pictures  
of the most  
beautiful  
bungalows  
of Southern  
California

years to come, no matter how skilled the salesman was who made the attempt.

The case of the Sherwin-Williams product is different. This lead arsenate ranks with the best brands on the market. In other regions it is a safe and effective insecticide. During the season of 1909 the burning of foliage was not very pronounced, but in 1910 the losses from this source were very severe. We thus have in the experience of 1909 and 1910 with the Sherwin-Williams arsenate simply reproduced the experience of the valley with Swift's arsenate during the seasons of 1904 and 1905.

Orchardists should insist that until manufacturers are ready to produce a strictly neutral lead arsenate they have no right to sell their products in this valley.

The danger from the use of the Sherwin-Williams lead was understood and announced by Mr. Volck, but notwithstanding his warnings buyers could be found, and the material was sold. It was not contended that this lead was a strictly neutral lead arsenate. The presence of an excess of arsenic acid was easily determined by chemical tests, and the foliage test entirely confirmed the chemical test. The only argument was that such compounds were safely used elsewhere. Had this valley been comparable with other sections it would not have required eight years to bring the growers to practical unanimity as to the value of spraying. There would not have been the reaction against spraying during the years 1906 and 1907; indeed, it is probable that the special services of the university would not have been required at all, but the growers themselves would have brought spraying to a successful issue during the twelve years that intervened between the successful experiments of Professor Wickson and the beginning of the codling moth investigations in 1903.

The one thing that the experience of these eight years has demonstrated is that the conditions are peculiar. The good to come from this years' experience should be that hereafter a lead to sell in this valley must correspond with the standard found necessary under our peculiar conditions. There is no reason why other manufacturers than the local firm might not produce these goods, but up to date none of them has done so.

This brings up the desirability of a state insecticide law. There is certainly a great present need for such a law, and it should commend itself to the active support of everyone here present. No doubt last year's experience with the IXL compound would scarcely have been possible, and this year's experience with a pyro lead compound would have been less likely because of the greater respect many orchardists would have had for warnings from a state office. Nothing, however, seems sufficient to protect some farmers from plausible agents, as was witnessed in this valley this year when some of them were persuaded to part with their money for an absolutely fraudulent fertilizer compound—a product which it should be ille-

gal to offer for sale in the state as a fertilizer.

The discovery and adoption of a safe arsenical is an essential factor, without which successful spraying is impossible, but we should not lose sight of the fact that other questions must also be considered if we are to secure the full benefits of the practice. Doubtless next year no dealer in the valley can afford to offer for sale any lead arsenate against which there is any suspicion of lack of neutrality, and the question of a safe arsenical will have been settled. Then the only questions remaining are those of quantity, manner of spraying and time.

The former of these I propose to discuss with the growers of the valley when the agricultural train comes to this section in a few months from now, and will then have apparatus by means of which I can illustrate my remarks. Today I will limit myself to the discussion of the time for spraying.

The experience of these eight years has abundantly proven that to produce the best results we cannot follow the practice of other regions.

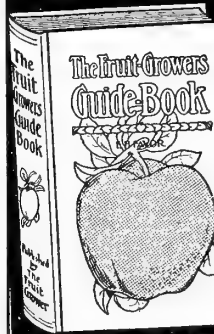
In the Pajaro Valley alone of all the regions where apples are grown commercially we have one section where trees need not be sprayed at all for codling moth. The section of the valley towards the sea from Watsonville is a naturally immune area. The immunity is due to the fact that the evening fogs and cold winds from the ocean reach this region

so early as to almost invariably prevent the flight of the moth, and in consequence the laying of the eggs. Sometimes after worms have been taken into an orchard of this district in apple boxes a few wormy apples are found for a year or two, but never enough to be of any significance. This immunity does not extend further inland than the City of Watsonville, for as soon as a point is reached where the moth will be able to make a flight once or twice in a month it may be able to lay its full quota of eggs, and the worms become as numerous as though the moth could fly every evening. Nevertheless the condition which results in an immune area below the city profoundly affects the life history of the insect throughout the whole valley. This influence of the ocean is what has made the climate of the Pajaro Valley so peculiarly adapted to the production of the type of apple grown here to such perfection.

In bulletin No. 155 we divided the work of codling moth control into three campaigns. The first to consist of the work of putting poison in the blossom cup, the second what other sprayings were found necessary to control the first brood of worms and the third the sprayings against the later broods.

The accumulated evidence of eight years of experimentation and observation all shows that the blossom cup campaign is of no practical value in any part of the Pajaro Valley.

## FREE This Wonderful \$10,000 Book On Scientific Fruit Culture



### For New Subscribers to "The Fruit Grower"

Prof. E. H. FAVOR, the famous Fruit Expert, has prepared for *The Fruit Grower* a wonderful new book, "The Fruit Grower's Guide-Book," and it will add thousands of dollars to the profits of every Fruit-Grower who reads it. This book is a result of the lifetime experience of thousands of fruit-raisers, took years to compile, and has just been published at an enormous expense. But you can secure it FREE of charge.

This great book, full of practical interest to the small owner, and of almost priceless value to the fruit grower operating on a large scale, will be given absolutely free with each new \$1.00 subscription to *The Fruit Grower*, the world's greatest horticultural paper.

Prof. FAVOR has written this volume in a beautiful, fascinating, non-technical style, which makes every phase of the subject so

clear that a child can understand and appreciate it. Even if you know nothing, whatever, of fruit-growing, this wonderful Book will lead you easily along, lesson by lesson, from the simplest elementary principles of horticulture, until you have the information of a qualified, expert fruit grower. This Book is simply indispensable to anyone who is interested in fruit growing. In all the history of Horticulture no work has ever before appeared which gives in concise form so much important information, boiled down, right up-to-date, on fruit-growing. What the Encyclopedia is to the Scholar, what the Compass is to the Sailor, the "Fruit-Grower's Guide Book" is to the Fruit Grower. Some enthusiastic readers who have inspected the Book claim it is

## "Worth Its Weight In Gold"

### FREE! This Book Tells You

- How to make big money in fruit growing.
- The best location for planting orchards of every kind.
- How to plant, prune, spray and graft.
- All about orchard heating.
- How to pick, store, harvest, market and ship your fruit.
- All about transplanting and the use of fungicides, insecticides, etc.
- How to can fruits and vegetables of every kind.
- The very latest information on all fruit-growing topics, and it gives you thousands of money-making hints, with practical advice of great value to either large or small fruit raisers.

Mail Coupon Today!

If you merely want to set out a few trees, Prof. FAVOR tells you how to do it and how to turn your fruit into thousands of dollars. If you think of going into the fruit growing business, this great Book should be worth thousands of dollars to you, and you should have it by all means!

### A Marvel of Costly Research

Great pains were taken to make "The Fruit-Grower's Guide Book" practical and thorough in every detail. No man could have written it from his own experience. It is the result of testing every theory, weighing every fact, condensing and compiling the actual experience of many thousands of successful Fruit-Growers.

### The One and Only Complete "Guide Book"

The preparation of this book required years of study and practical experience, the traveling of thousands of miles from east to west and from north to south, investigating famous fruit-growing orchards, interviewing successful fruit-growers, and many magnificent photographs taken will appear in this book, in an effort to make it of greatest value to American Fruit Raisers.

### Free With "The Fruit Grower"

We offer a copy of this magnificent book to anyone sending \$1.00 for a year's subscription to *The Fruit Grower*, America's Leading Fruit Journal. Many readers say one copy of our big, illustrated, 88-page edition is worth a dollar to any fruit-grower, but you can get the paper a whole year for \$1.00, and we send you FREE, to encourage horticulture, a copy of this beautiful cloth-bound book. This offer holds good for a short time only, and there will be a great demand for the first edition, which is limited, so you should order at once to be sure of securing your copy. **COPY NOW! TODAY!** Do it now. You should have a copy of this great book. Address

**The Fruit Grower, Desk E St. Joseph, Mo.**

### Mail Coupon Below

Cut out along dotted lines and mail coupon with \$1.00 for a year's subscription to *THE FRUIT GROWER*, and you will receive free, prepaid, a copy of "THE FRUIT-GROWER'S GUIDE BOOK." This work is handsomely bound in golden-brown cloth, cover stamped in colors, comprises nearly 300 pages, and is profusely illustrated with half-tone cuts direct from nature. Send your name at once, as the edition is limited and won't last long.

**THE FRUIT GROWER,**  
Desk E St. Joseph, Mo.

Enclosed find \$1.00 for a year's subscription to *THE FRUIT GROWER* and my Free Copy of *THE FRUIT GROWER'S GUIDE*.

Name

Address

Upon this point the best practice of our growers stands in most striking contrast with that of many other regions, and is most sharply opposed to the recommendations found in the greater part of the literature on the control of the codling moth.

At the present time there is something of a controversy between advocates of numerous sprayings and of those who claim better results from a single spraying. Both parties believe in blossom cup spraying, and the single spray advocates contend that if the blossom cup work is done thoroughly enough there will be no necessity for any supplementary sprayings. The outcome of the work in this valley is the discarding entirely of the blossom cup work. This does not in any way call in question the value of blossom cup spraying in other regions; indeed, the evidence seems to be conclusive that in some regions the single spray method produces results that are as good as can be produced by any method, but simply emphasizes the difference corresponding to the climate of the different localities.

One condition which renders the single blossom cup spraying an impossibility here in the Pajaro Valley is the long period of blooming. Before a tree is in full bloom one often finds fruit on the tree as large as the end of one's finger. If it were necessary to place the poison in every blossom cup at least three sprayings would have to be given during the blossoming period.

A second condition rendering blossom cup spraying inefficient in this valley is the fact that comparatively few of the worms enter the fruit at this point. This difference in the habit of the young worm corresponds with the fact that the fruit is almost always larger before the worm attacks it, and in every district where worms attack larger fruit a large proportion enter on the side. Here it is the first generation that makes the side entrance, and elsewhere the first generation attacks the fruit when very small. The same cold spring water that causes the long protracted bloomings of the trees holds back the appearance of the moth still more, and instead of all coming forth simultaneously the overwintering individuals are emerging during two or three months. Most of the eggs are not laid till the fruit is well advanced.

The basis for the discarding of the blossom cup spraying, however, was not so much this observation of the peculiarities of the life history as the fact that perfect control, as good as is obtained by any method, is the result of a spraying program which absolutely ignores the blossom cup work. As far as is known none of the orchardists in this valley have ever practiced blossom cup spraying. Mr. Volck has employed the term "blossom cup spraying" to describe the effort to wet the hairy portion of the apple just outside of the blossom cup, but this is not at all what is meant by the term elsewhere. Others mean the inside of the cup, where the pistil and stamens arise.

Almost complete absence of worms at picking time can be secured when no

# Lime-Sulphur

The C. G. Betts Co.'s Guaranteed Solution  
EVERY BARREL LABELED WITH MEASURED CONTENTS

SPOKANE SEED CO., Spokane, Washington

GENERAL SALES AGENTS

WRITE FOR PRICES



## Come to the Fertile Northwest!

*The Prosperity States of America*

Get a home in this Land of Plenty. Make a comfortable living—and a good profit—as thousands are, raising fruits, vegetables, grains, grasses, alfalfa, cattle (or dairying), hogs, poultry, bees.

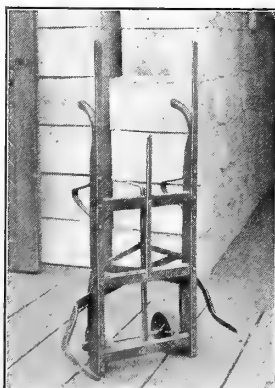
A healthful, growing climate—land marvelously productive, in irrigated and non-irrigated sections. Free Government land in choice localities. New extensions of the Northern Pacific Railway and its allied lines are opening up rich fields to the Homeseeker. Come now, while you can buy land cheap.

Tell us which state you are interested in, what kind of land you want, and what you want to do. We will send free illustrated booklets and full information about low fares to the Northwest for the Spring and Summer months. Ask for illustrated folder "Through the Fertile Northwest."

Minnesota, North Dakota, Montana, Idaho, Washington, Oregon—here lies your chance—along the Scenic Highway in the Land of Fortune. Don't delay—write today.

A. D. CHARLTON, Ass't G. P. A., Portland, Oregon  
A. M. CLELAND, Gen. Pass. Agent, St. Paul

### Northern Pacific Ry

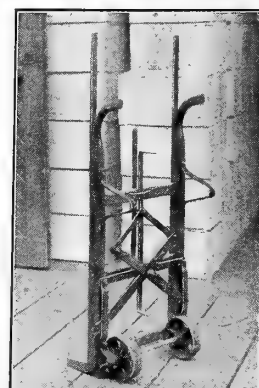
## The PERFECTION CLAMP TRUCK

Patented 1910 in U. S. and Canada

Saves labor, jar and breakage. Indispensable to fruit dealers and growers. Write for circular giving descriptive details and prices f.o.b. Seattle, Portland and Vancouver, B. C.

Manufactured by

SAMSON & ARCHIBALD  
Vernon, B. C., Canada



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



effort at all is made to control the first generation of the insect. This practice, however, is not to be recommended, and is indeed not the present practice of any of the growers. However, if an orchardist desired to make a single spraying do for the year an application in August would give, in this valley, the best degree of control that could be secured by any single application. The reason that the first generation generally produces but little or no loss to the crop is the fact that the dropping of a few infested fruit in mid-summer simply thins the crop and decreases the number of apples, but not the number of pounds of fruit finally harvested. The wormy fruit found at picking time is practically all the result of the work of the later generations of worms, and a thorough spraying in August will destroy the larger proportion of these.

The reason why the single August spraying is not recommended is that while such spraying prevents a large part of the fruit becoming wormy it will not prevent the spots produced by the very young worms before they get enough poison to kill them. These spots are about as conspicuous as those produced by the San Jose scale, and, of course, should be avoided as far as possible. A single spot of this kind does not at present cause fruit to be graded down, but it is certainly objectionable.

The present practice of endeavoring to destroy as many as possible of the first brood is correct, according to our present knowledge of the problem, provided they are supplemented by one or more later sprayings. Such a large proportion of the apple orchards are sprayed that the wormy apples now allowed to rot on the ground or sent to the dryers are almost entirely due to the neglect of this very

Faculty Stronger Than Ever  
More Progressive Than Ever

Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

**Behnke-Walker** Business College

PORTLAND, OREGON

necessary part of the program of effective spraying.

The spraying in August will justify itself in the financial returns from the crop at least equal to, and in most cases very much better, than any of the earlier sprayings. There may be some improvement possible in some orchards by increasing the thoroughness of the application, and perhaps also in the better timing of some of the earlier treatments, but in the majority of cases the spring work is well done, and all that is necessary to bring up the general average till it fairly approximates the best practice is the addition of the later sprayings. This is, therefore, the one point where we can expect to obtain rapid and tangible results. The general adoption of the autumn spray will add hundreds of carloads to the output of the valley and a corresponding amount to the profits of apple growing in this valley. In these later sprayings the necessity of using a strictly neutral arsenate is particularly apparent. The poisoning effect of arsenicals shows itself in two very different ways. The burning of the edges of the leaves is apparent to everyone in cases where considerable quantities of soluble arsenic enter the plants; sometimes quite as serious results may come, however, without characteristic scorching. Chronic poisoning, showing itself only in the yellowing and dropping of the leaves early in the fall, prevents the development of the full size, sweetness and crispness of the apple. In extreme cases this chronic poisoning of arsenic may result in an almost complete loss of the crop on account of their small size and inferior quality. Fortunately for the growers in this region a perfectly neutral arsenic is obtainable, and it is possible to determine both by chemical and foliage tests the character of such an arsenical, and there is no longer any excuse for omitting this spraying, which otherwise would be so dangerous as to render it problematical whether their application would be justifiable. If next year is to see the same advance in spraying that the valley has experienced the last three years, it can only be done by improving the spraying practice in the way here suggested.

At the beginning of my remarks I stated that no equal area in the world showed so universal and efficient spraying. It should not be understood that there are numerous smaller areas that are better treated; indeed, it seems to be generally conceded that many of the smaller valleys in the Northwest pro-

duce fruit which averages much freer from culls than does the Pajaro Valley. It should be our ambition to not only maintain the pre-eminence of amount of spraying, but to produce fruit which will average equal to the best, notwithstanding the fact that in some particulars we have greater difficulties to overcome.

The codling moth is by no means the only cause of cull fruit, nor is it the only insect trouble that has been investigated in this valley. Extensive and significant experiments have been conducted against the tussock moth or horned caterpillar, the canker worm, the tent caterpillar, the woolly aphid and the two species of leaf aphids. Only the tussock moth has been discussed in bulletin form, but others would have been presented by the university but for the shortage for several years in printing funds.

Perhaps quite as notable as the positive results has been the immense quantity of negative results, such as those secured by the detailed study of the birds of the Pajaro Valley, which also awaits publication, and those produced by the testing out of hundreds of arsenicals. We trust that ultimately we will be in a position to put these results in tangible form for

### Don't Put Off Painting— It Will Prove Costly

The longer you put off painting the more oil and lead the job will take.

While you wait your buildings rot, exposed to the weather.

The cost of paint made of

#### "Dutch Boy Painter"

white lead and pure linseed oil is not so high as you may think.

For an average house, the cost now of this genuine old-fashioned, mixed-to-order pure white lead paint is not more than \$4 or \$5 greater than it used to be. Much cheaper than repair bills.

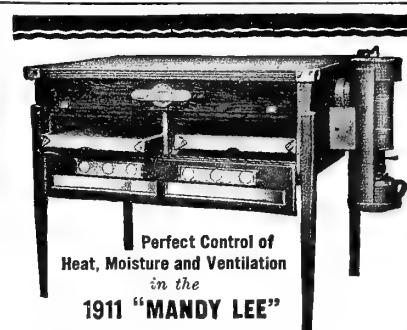
Write for our free  
"Painting Helps No. 330"

#### NATIONAL LEAD COMPANY

New York Cleveland Chicago  
St. Louis Boston Buffalo  
Cincinnati San Francisco  
(John T. Lewis & Bros. Co.,  
Philadelphia)  
(National Lead and Oil Co.,  
Pittsburgh)



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



Perfect Control of  
Heat, Moisture and Ventilation  
in the  
1911 "MANDY LEE"

Investigate the "Mandy Lee" right now and send in your order early, for no other incubator will satisfy you when you know the points of superiority of the "Mandy Lee." The factory could not fill all orders last season.

Life-giving Oxygen is supplied freely at the egg-level without losing the moisture so necessary at all times and imperative when the chicks are coming out. No other incubator on the market gives this important advantage.

Complete Catalog No. 202 and Lee Booklets free.  
Send Now. Be in Time.

**PORTLAND  
SEED COMPANY**  
PORTLAND, OREGON



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



future students of the subject. We are more interested here, however, in the positive results, and I need only point to the very material progress made in the testing of the efficiency of insecticides and their foliage neutrality and the discovery of new methods of manufacture, from which the orchardists of this valley are already receiving benefits. Among these we wish also to call your attention to the arsenite of zinc. This has proven to be the safest of the arsenicals that can be procured in the form of a dry powder. It is not so safe, of course, as the neutral lead arsenates, but has been used without very serious evidence of burning in the orchards where dusting has been adopted instead of spraying. Dusting is usually entirely unsatisfactory, and has been condemned by a great many of the Eastern experiment stations. Here in the Pajaro Valley, however, undoubtedly because of our persistent fogs, results almost, if not quite, equal in efficiency to those obtained by spraying are secured from dry applications by quite a number of our orchardists. There is no doubt that the zinc arsenite stands foremost at the present time among the available arsenicals with high arsenic content. Its particular value in the Pajaro Valley lies in its availability for use in spraying for the tussock moth early in the spring when the danger from arsenic injury is at its minimum. This gives us a better means of control than that recommended in our bulletin No. 183 on the tussock moth.

Mr. Volck has also made great progress in clearing up the problems associated with the manufacture of emulsions, miscible oils and soaps. A phase of this work which is bound to have very important results is the progress made in the incorporation of nicotine. I trust that before long the opportunity will come for the presentation of the results of these investigations in bulletin form. Mr. Volck's association with the California Chemical Spray Company has given him unusual opportunities for perfecting the manufacturing side of these preparations and has made it possible for the growers in this valley to immediately avail themselves of the result of the investigations.

Among the triumphs in the manufacture of insecticides, one that stands second only to the creation of a neutral arsenate, has been wrought out through the work of the last three years, whereby the grade of commercial lime-sulphur solution has been steadily advanced till now it reaches a standard of 36 degrees Baume, a strength one-fifth higher than any found in the market three years ago, and decidedly higher than the output of any other factory in the United States or in the world. This has been done without increasing the cost to the grower, and is, therefore, equivalent to a reduction in price of twenty per cent. The production of this lime-sulphur mixture commercially in this valley has resulted in quite as notable an increase in the amount of spraying for San Jose scale as that indicated on the chart in the case of spraying for codling moth, with the difference, however, that work against the San Jose scale does not

require a treatment each year, therefore the number of acres unsprayed in any particular year will always remain larger than that treated. The amount of lime-sulphur solution applied to the orchards in this valley this year exceeded 1,600 barrels.

I will not attempt, however, to discuss in detail the development of this process, nor refer to the great progress made in the control of the mildew, but will close with the thought that the orchardists in this section deserve all of the success that they have secured through these investigations, since they have shown a long-sighted policy, not only in the inauguration of the investigations in

1903 and the maintenance of the work through the succeeding years, but by their persistence, notwithstanding the discouragements of 1905, and I rejoice, as I know you rejoice, in the fact that this investigation has resulted in the establishment in your midst of such a manufacturing plant as that of the California Spray Chemical Company. Of course my own first interests are in the scientific results obtained, but I have little doubt that this factory is destined to continue in this valley as a more efficient living influence than the direct work of the university toward the production in the highest quality of fruit in this valley.

## FRUIT GROWING IN THE ROCKY MOUNTAINS

BY E. R. BENNETT

**F**RUIT GROWING as a commercial business has been largely developed within the past one hundred years. America—that is the United States and Canada—leads the world in its output of fruit, particularly fruits of the temperate zone. The apple, though a native of the Old World, reaches its highest development and greatest production in North America. In the colonial days the apple was grown and used extensively in the eastern part of the United States, but the varieties were for the most part inferior seedlings, and the apple was utilized largely in the making of cider and other alcoholic products. This probably accounts for the lack of interest taken in the early history of apple growing in the United States in developing better varieties of fruit.

Another factor that may have been somewhat responsible for the conditions that existed was the fact that apples, and in fact all kinds of fruits, were produced one hundred years ago without any particular care. The apples of New England may be said to have grown wild, and after they were first planted by the settlers the squirrels carried seed into the stone walls that soon produced trees, and even now a large part of the apple production in parts of New England comes from these seedling trees that are growing along walls and fence rows of the New England farms.

The many diseases and insect pests that have to be contended with at the present time were largely unknown in those days, and good apples of their kind were to be had from any of the farms from New England to the frontier.

A half century ago apple growing was more or less profitable in connection with the general farming of the Central States, and the apple orchard was one of the features of every Michigan, New York or Illinois farm. A few years later the diseases and insect pests became so prevalent that it was difficult to grow apples that were at all salable, or even fairly edible. Up to this time apple growing, or in fact fruit growing of any kind, can hardly be said to have been an industry. When the diseases and insect pests made apple growing as a side issue unprofitable the opportunity for apple growing as an industry became possible. In fact from this date—that is,

twenty-five to forty years ago—may be traced the rise of fruit growing as an important industry in the United States. The experiment stations became active in working out remedies for the various troubles that beset the fruit grower and individuals began seeking for varieties that were better adapted for culinary uses and as dessert fruits.


The old farm orchard of the East has become largely a matter of history or sentiment, and has to a great extent passed away, as practically none of them has in the past fifteen or twenty years produced fruit enough to make the orchard worth leaving on the land. Even in the past ten or fifteen years the fruit growing principles and practices have very materially changed.

Fruit growing is an intensive business, and the cost of production is necessarily high whether the returns are large or small. As a result only those places will succeed in commercial fruit growing that have all conditions uniformly favorable.

# LILLY'S BEST SPRAY BOOK

This is the book every fruit grower and farmer needs. It is complete in every detail including an absolutely scientific Spray Calendar with diseases and insects illustrated and described.

**HAND AND POWER  
Spray Machinery**



Tested sprays and insecticides are all included together with prices, illustrations and full descriptions. Lilly's Spray Book is a practical guide. Send for it—free to those asking. **Chas. H. Lilly Co.,** Seattle.

Of the different factors that are essential in the business we mention, first, the location. This must be where the soils and climate are at least fairly congenial to the wants of the particular fruit to be grown. The next factor that must be considered is that of distance from and availability of markets. There are many districts that are too inaccessible to make it commercially profitable to grow fruit. Another factor that must be considered in fruit growing is the comparative immunity from diseases and insect pests. No place is entirely free from all diseases and pests, but some places are more subject to certain diseases than others because of climatic conditions or geographical location.

Different species of fruit, and even different varieties of the same species, need different conditions under which to reach their best development. Most of our fruits, however, are cosmopolitan in their wants, and may be grown fairly successfully on a great variety of soils and under many different conditions. The apple in particular, although it demands a fairly rigid climate to reach its highest quality, is grown from far north in Canada to the Southern States.

At present fruit growing in the United States and Canada, particularly apple growing, is divided into five great areas or districts. Each of these has its peculiar advantages of location and climatic conditions. Each of these districts is also competing with the others in the markets of the world. The first and oldest of these districts is that extending from Nova Scotia through Northern New England to the Great Lakes. This area is characterized by a short season, with an abundance of moisture. Because of these conditions the quality of the fruit in this district is uniformly high. On the other hand, the humid climate

very little of the stringiness so common makes favorable conditions for the development of all the fungous diseases that trouble fruit growing, and because of the age of the industry in this district all of the insects that are known to fruit growers have to be combated. As a result this area produces the maximum of high quality, but imperfect fruits.

The next district is that of the Appalachian Mountain States, running from New York to Virginia and Kentucky. This district is characterized by a longer season, but with a maximum of rainfall. The fruit produced in these districts is not uniformly as high quality as that in the North, and the fungous diseases and insect pests are practically the same as in the first district mentioned.

The third great fruit growing area is that known as the Ozark district, embracing part of Kansas, Nebraska, Missouri, Arkansas and adjacent states. This area is characterized by a long season, with a fair amount of moisture. Insect pests and fungous diseases are practically the same as that of the previously mentioned districts, and the long season tends to produce an excess of tough, woody tissue in the fruit. In this region such varieties as Ben Davis, Gano, Missouri Pippin and Arkansas Black are largely grown.

The next important fruit growing section is that of the Rocky Mountain district, embracing Colorado, New Mexico, Utah, Idaho, Montana and Wyoming.

The fifth important division is that of the Pacific Coast, including California, Oregon and Washington. This district, because of its semi-arid climate, is comparatively free from fungous troubles, and because of its comparative newness is also free from the many insect pests of the East. As a result the fruit is characterized by freeness from fungous diseases, but owing to the long season it is not so good in flavor and texture as that of the North, or the Nova Scotia district.

The Rocky Mountain district has some characteristics that make it different from any of the other four areas. Some of the principles in horticulture are involved that are worth while for our fruit growers to keep in mind. First, our high altitude gives us a short season that corresponds with that of the Canadian districts. The result of this is to make a fine or delicately tissue fruit. This fruit will not stand handling as well as that of the Ozark district, but so far as tissue goes no better quality can be grown anywhere. The most important feature to keep in mind, however, is the principle that high altitude reduces the flavor. At first this might be thought to be a disadvantage to our fruit growers. If recognized and properly taken into account it does not need to be a drawback; and in many cases is an advantage. The principle is well illustrated from the celery and cauliflower growing of this state. In lower altitudes these vegetables tend toward a stringy, tough tissue, with a strong flavor. In the high altitudes of Colorado neither of these characteristics is noticeable. The celery is crisp, with in the East and none of the rank, strong

flavor so common there. Other illustrations might be given, but these are sufficient to demonstrate the principle.

In applying this principle to our fruit growing we can readily see that it is necessary for us to grow those varieties of fruit that will stand cutting down in flavor and still leave the quality good. This is best illustrated by the Jonathan apple. In New York and New England the Jonathan apple is a decidedly acid fruit. With us the Jonathan is a mild sub-acid fruit. The toning down of the high altitudes is just what the Jonathan needs to give it the delicate flavor that is desired to make it a valuable dessert fruit. The Baldwin, which is grown more than any other apple in New York and New England, is a mild sub-acid fruit in that district. Here the Baldwin is so deficient in flavor as to be practically valueless as a Colorado apple. For this reason the varieties adapted to Colorado are those that are strong, or, as you might say, heavy flavored in lower altitudes. Many thousands of dollars have been thrown away in Colorado because this principle was not recognized and acted upon in the earlier days of fruit growing in the state. Even now our old orchards are largely made up of such varieties as Ben Davis, Whitney Crab and other varieties even more worthless. It is probable that these are present in the orchards largely because of a prevailing notion that the better varieties were not sufficiently hardy for our climate. We now know that the best varieties that are obtainable are sufficiently hardy to withstand the climate of Colorado, even as high as 7,000 feet in some parts of the state.

In looking over the situation of apple growing in the United States it would seem to us that our great advantage is in the fact that we can produce as good a tissue apple as the best districts of America; we have almost no fungous diseases to contend with, comparatively few serious insect pests, and by selecting the proper varieties may grow a quality of fruit that is unsurpassed. We must recognize, however, that other districts have woken up to the fact that the troubles that twenty years ago seemed to be hopeless may be controlled, and not only may be handled, but are being handled in many of the other districts of the United States. The whole fruit growing industry has undergone not a revolution, but an evolution, in the past few years, and while the old farm orchard of the East is a thing of the past many of those places are now making orcharding a business, and through better cultural methods and better care of the trees in the way of pruning, spraying, thinning, etc., are producing fruit that will make a close competitor to the best of our Western fruits. Our growers have sufficient advantages that should enable us to hold the enviable position in the markets of the East that has been secured. It will be necessary, however, for us to use the very best methods that are known to horticultural science from the time the scion graft is made till the apples are placed in the hands of the consumer.

## BETTER POULTRY BETWEEN BETTER FRUIT IS PROFITABLE



Coop Completely Closed

There's money in it. Our new system of trap-nesting all your fowls, without the old-time prohibitive labor, insures poultry profits to the fruit man.

### The Chantecler Colony Coop

Affords ideal conditions and best results. Chickens are always well and working for you. A money-maker and a time-saver.



Easily Accessible—Quickly Cleaned

Write today for complete descriptive circular and mating lists of trap-nested S. C. R. I. Reds and S. C. W. Leghorns.

### CHANTECLER POULTRY FARM

310 E. 15th So., Salt Lake City, Utah

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## ORCHARD DRAINAGE AND THE NECESSITY OF IT

BY A. H. CARSON, COMMISSIONER THIRD DISTRICT, GRANTS PASS OREGON

**T**HERE are many orchards, already planted and being planted, where the question of drainage has not had the thought and consideration of the planter that it should have to warrant the future success of the orchard. A fruit tree of any kind cannot be planted in wet, cold soil, thrive and be a source of profit. If the land is not naturally drained by a gravel sub-soil that is porous and freely admits the water from winter rains passing through it and draining off below then it should be drained by tiling.

Many of our tree planters take it for granted that our hill slopes are naturally drained because of the grade to the slope when as a matter of fact there are but few hill slopes in Southern Oregon that would not be materially benefited and improved by under draining with tile.

Our hill slopes in Southern Oregon are clay loams, often resting on a stiff clay sub-soil or hardpan from two to three feet below the surface soil. During our winter rains these red clay loams, if resting on a clay sub-soil or a hardpan, hold water in suspension, fill up and the water then flows off over the surface. A wet winter keeps soils of this character filled with water from three to four months during the wet period. A fruit tree planted in such soil has its roots submerged during all the wet period of the year until in many cases the tree is drowned—actually killed. If not killed its vitality is so greatly weakened by the roots being submerged for so long a period that when the growing period arrives it fails to respond, and eventually dies.

The hill slopes of Southern Oregon, from surface indications, look the same—red loam. Their adaptability to the growth of fruit of any kind is a question of depth, and the texture of the sub-soil to facilitate drainage. If the red clay loam soil has a depth of four to more feet, resting on a porous gravel or on decomposed bedrock, then such conditions would insure natural drainage, and such soil could be safely planted to the apple and pear, and would, by thorough cultivation to conserve moisture, give the planter returns for care bestowed. On the other hand, should this red clay loam be from two to three feet in depth, resting on a clay sub-soil, such soil should never be planted to fruit of any kind until under drained. This is a shallow soil, with the water table too near the surface, which would hold water during the wet period, which would drown the tree planted in it. The only way to make these shallow soils available for successful tree growth is by under drainage by tiling. A fruit tree planted in soil of this shallow depth (the water table being but a foot or two below the surface) would not have depth of soil sufficient to anchor itself to sustain the force of a strong wind storm when the ground is saturated with water, as the roots will not penetrate below the water table. Then there is not a depth of soil that would give

soil enough for the tree (should it live) to draw nourishment enough to mature a crop of fruit, and it would not be practical, with the best cultivation, to make a tree grow in such a shallow soil, for the reason that soil, being filled with water during the wet period, would not drain off until late in the spring, when the top would bake, and then, if stirred with a plow, heavy clods would form, and it would be impossible to make it fine and create the dust mulch, so necessary to conserve moisture for the growth of the tree during the dry period of the season. Without this dust mulch such shallow soils dry out through capillary attraction to the water table and the tree perishes for the want of moisture.

Where the water table is near the surface these shallow soils, during the wet period, are the wettest soils we have on this Coast and during our dry period are the driest. A soil of this kind can be made available for fruit growing by lowering the water table to four to five feet below the surface by under draining by tiling. By tiling to a depth of four to five feet the winter rains pass through these soils and drain off through the tile. In a year or two this draining off through the soil causes the clay sub-soil to break up, slake and become porous, and to the depth you have laid the tile you have deepened the soil. It takes from two to three years after the tile is laid for all the stiff clay sub-soil to break up and become porous. We under drain shallow soils, and by so doing accomplish a greater depth of soil. We carry off the excess of water that falls during a wet winter through the soil to the drains below. We create a depth of soil that has double the amount of storage of water by absorption that we can conserve for the growing tree by good cultivation, and also a fine dust mulch. By drainage we carry the water through the soil, which is a fertilizer, making it possible for whatever plant food there is in the soil to decay and become soluble for the growing tree, and through the action of the air passing through the soil give the tree the essential gases—oxygen and nitrogen—it must have for a healthy growth.

As paradoxical as it may seem, we tile wet land to make it dry and also to make it wet. This is seemingly contradictory, yet it is a fact. Still it is no more a fact than that our wettest soils during a wet period are our driest soils during a dry period. By tiling we make it possible for air circulation through the tile and through the soil. At the driest period the air at night is always charged with more or less invisible moisture, and by the air circulating through the tile and soil particles condensation occurs because of the difference in temperature, and the moisture is left in the soil for the growing plant. This has been one of our very dry years, and where irrigation could not be had many growing crops have been short, and this shortage is particularly noted on shallow soils. On all soils that have been under drained

by tiling it has been observed that crops, both fruit and truck, have grown luxuriantly. The under drained soils have had a continual supply of moisture from, condensation that occurs from air circulation through the soil by way of the tile.

Many of our hill slopes that do not require drainage to carry off the water from heavy rains can be made very productive by tiling, so as to create the necessary moisture for growing crops by air circulation through the soil.

Where drainage is contemplated the one who does it must not forget that the deeper the tile is laid the greater area of ground it will drain, and the deeper he has made his soil. Another essential

*J. M. Schmeltzer, Secretary*  
**Hood River Abstract Company**  
 Hood River, Oregon  
**ABSTRACTS INSURANCE**  
**CONVEYANCING**

## PORTLAND WHOLESALE NURSERY COMPANY

*Rooms 1 and 2 Lambert-Sargeant Building*  
 Corner East Alder Street and Grand Avenue  
 PORTLAND, OREGON

## S. E. Bartmess

**UNDERTAKER AND  
 LICENSED EMBALMER**

*For Oregon and Washington*

**Furniture, Rugs, Carpets  
 and Building Material**

**Hood River, Oregon**

C. M. SHAW

ROY F. DEAN

*Dean & Shaw*

**Electrical Supplies and Fixtures  
 Scientific Electrical Construction**

Home Phone 3 Hood River, Oregon



**LILLY'S  
 BEST  
 BEE  
 SUPPLIES**

Are standard—the best to be  
 had for money-making  
 purposes. We are  
 Agents for Lewis Bee Ware.  
 Send for Catalog.  
 Most authoritative Bee Book  
 issued, 84 pages of definite  
 information. Illustrated.

**The Chas. H. Lilly Co. Seattle.**

is grade. Every tile should be laid on grade. In fact where a plot of ground is to be drained it will pay to have the services of a competent civil engineer to lay off the mains and laterals and establish the proper grade. There should be no guess work as to grade. Every tile must be laid on grade or else the purpose of cutting ditches for tile, which is expensive, would be lost. A single tile out of grade would soon fill up and your purpose to drain your land would be defeated.

The expense of under drainage is a factor that perhaps deters many from undertaking it. However, when the benefits derived from under drainage are once understood the time will come when many thousand acres in Oregon will be under drained. In fact the question of irrigation will be one of the factors that will force under drainage, as it is one of the problems of irrigation to get the water to the land and then to run it off, and shallow soils, with a clay sub-soil, cannot be successfully irrigated without under drainage. To emphasize the fact that with general irrigation, which in time will come in Southern Oregon when the benefits are better understood, under drainage will be necessary on many of our soils where the water table is forced near the surface by reason of an impervious clay or cement hardpan sub-soil, I quote Mr. Carl S. Schofield, agriculturist in charge of the Western Agricultural Extension Bureau of Plant Industry, which will be found under the caption, "The Problems of an Irrigation Farmer," in the Year Book of the Department of Agriculture, 1909:

"One of the most striking features in the history of irrigation in the Old World is the ruin of irrigation enterprises caused by the rise of underground water and of alkali. Both in theory and in practice these phenomena are closely associated. Arid lands almost universally contain large quantities of soluble salts, because these salts—the products of rock disintegration and soil formation—are not leached out by rain. The more common salts thus formed are sodium chloride, sodium sulphate and sodium carbonate, and though only the last is really an alkaline salt the popular term 'alkali' is applied to whatever salts occur in the soil water in sufficient quantities to check or prevent plant growth.

"Excessive irrigation, in time, fills the soil with water, in which these salts are dissolved, and the evaporation of the water from the ground brings the salts up and leaves them at or near the surface in constantly increasing quantities. Unless natural drainage courses are present, or artificial ones are created, the inevitable result of excessive irrigation is that the land becomes too wet or too alkaline for the growth of crop plants. This problem of underground waters should be constantly in mind, not only in the selection of an irrigated farm, but also in its management. It does not suffice that a farmer himself uses irrigation water judiciously, for the reckless use of water on adjacent higher land

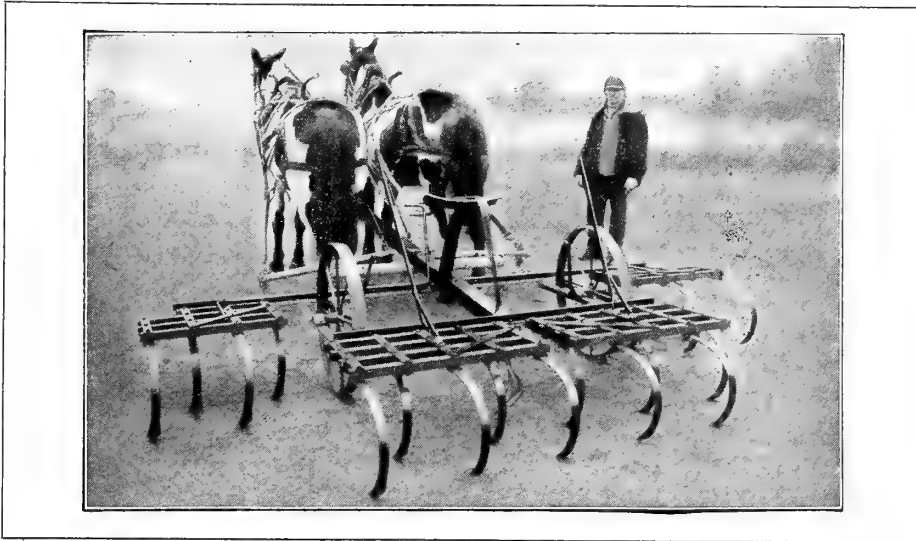
may ruin a farm completely. It is true that either underground waters or alkali alone may cause trouble in some cases, but they occur most frequently together, and both yield to the same remedy, which is adequate drainage."

Irrigated lands where the sub-soil is not porous, with a reckless use of water, soon become swamps. This condition of land becoming swamps is to be found in every irrigation district. From Secretary Wilson's report in the Year Book for 1909 it is estimated that about 700,000 acres of land in the West have become swamps. This land is under water, and the only possibility of reclaiming and making it productive is by under draining by using tile. Any and all contemplated systems of irrigation should

have careful surveys made of the sub-soil to determine if the same is porous and will afford the necessary drainage before water is conducted to the land for irrigation or else the promoters may stand to lose large sums of money that an unfavorable sub-soil would defeat were it clay or hardpan.

To put unfavorable land that requires drainage in condition for irrigation the outlay at the beginning is expensive, but in the end the results in production will make it a profitable investment.

When land is once properly drained, with necessary depth, it lasts forever, and with ample water is always productive and gains in richness with each generation for all time.



ORCHARD CULTIVATOR

**T**HIS is the day of the specialist. The proposition that confronts the orchardist of today is that of placing crop production on a sure and permanent basis. He must adopt the most scientific methods. Intensive cultivation is one of the essentials of successful orchard work and holds the key which unlocks the treasure vaults of the soil.

Several years ago, when I went into the peach-growing business in Texas, I realized the need of a light-running cultivator which would work my orchard level and completely mulch and stir the entire surface without disturbing the branches and fruit with the team. I wanted a tool that would reach under the low branches and relieve me of the laborious work with the hoe. I tried many of the best tools made for orchard work, but finding none that met my requirements fully, I set to work on constructions of my own and have built some ten different types of machines within the last four years.

My first triumph was in 1909, when I developed a spring-tooth harrow that would cover eleven feet of surface with one team. This harrow worked admirably and some of my friends thought it to be an ideal orchard tool, but it lacked many features I desired to have involved in an orchard machine. In building this machine I discovered the principle of making a light draft tool and continued my experiments and improvements until April of 1910, when I constructed what is known today as the light draft harrow. This tool has developed more ideal features than I had dreamed and has proven to be a most valuable implement wherever it has been tested.

The harrow is divided into four independent sections, which enables it to conform readily to uneven surfaces, and each section is under easy control of the driver by means of levers, which enable the operator to lift any one or all of the sections to free them of trash or to pass over obstructions, such as large stones, stumps, etc. All surplus weight is carried on the thirty-inch wheels with very little apparent draft, and the machine is balanced so that no weight is thrown upon the horses' necks, either with or without driver upon the seat. This harrow enables me to cover from twenty to thirty acres of orchard per day with one team of medium weight, and all progressive fruit men recognize the advantage of this rapid work.

The light draft feature of this machine is a surprise to all who have tested it, but it is no longer an experiment, and many large orchardists who were skeptical on this point have been fully con-

vinced after giving it a thorough test. Some of these men who were "doubters" one year ago are now the strongest enthusiasts for the merits of this new orchard tool, and declare it will be the means of revolutionizing the orchard industries of the country.

C. E. Forkner.

**K**ILLING QUACK GRASS.—A method has been discovered by Mr. P. B. Crane which makes it possible to kill quack grass. We give the formula for the solution used on page 14 of our February, 1911, "Farm Weeds." However, this is not all the information necessary. We should like to give you additional information, but cannot, as the Crane system of quack grass eradication is published in book form by the Webb Publishing Company, St. Paul, Minnesota, and is copyrighted. This book sells for one dollar and we suggest that you purchase it immediately. By purchasing this book you will have full right to use the Crane secret process of killing quack grass. Quack grass can be killed very quickly and with little expenditure. It is necessary to apply the solution in the form of a spray. Spraying machines are needed for this purpose. We refer you to our "Farm Weeds" for information pertaining to same. You can purchase sulphuric acid from your druggist. If you can purchase this in large quantities he should be able to supply you at a reasonable cost. It will give us pleasure to quote you a very low price on sulphate of iron. We shall be pleased to give you any additional information you may want regarding the killing of quack grass or any other weed pests in your locality. Yours truly, American Steel & Wire Co., Chemical and Color Department, Chicago.

Editor Better Fruit:

I enclose draft for one dollar for renewal of subscription. I think very highly of your specializing each issue; it makes it convenient for reference. Professor O'Gara's article on Pear Blight was worth to me at least much more than the subscription price, and many other articles of like value. Wishing you continued success, yours truly, I. F. Houston, San Juan, New Mexico.

Editor Better Fruit:

If you can keep up the pace in the character of your paper that you have been going during the past year, your subscribers will certainly get full value for their money. To one contemplating either buying or planting an orchard anywhere your paper is invaluable. Yours truly, S. D. Lieurance, Denver, Colorado.



## METHODS OF THE GROWING OF BLACKBERRIES

**T**HERE is perhaps no one fruit so universally grown as blackberries, because none stands so much neglect, and in many sections of the country no pretense is made at cultivating it, as the wild vines or canes spring up in every fence corner and every brush thicket, yielding delicious berries to be had for the picking.

These wild berries have a peculiar flavor or "tang" differing from the cultivated varieties, and on this account are liked better by some people than the latter, while others prefer the garden grown berry. In any event the blackberry is a desirable successor of the raspberry, and the earlier kinds are ripe before the raspberry season is ended. Everyone who has a patch of ground of his own should have some blackberry vines, for the patch, with good care, will continue in bearing year after year for a decade. The new plantation is easily started by taking up the suckers which every year spring up along the rows, or bits of roots three or four inches long may be planted, and these, in a year, make strong plants, ready to be moved to the location desired. It is thus easily seen that choice varieties can be made to multiply very fast. The plants should be set from four to six feet apart in rows eight feet apart.

The blackberry, to succeed well, must be grown on rich, well drained land, and in general these conditions can be secured by thorough cultivation. Naturally, porous, sandy land is ideal if rich in plant food, but moist, rich land, with an excess of nitrogen, will grow too rank canes, which easily winter kill. This can be easily guarded against by application of commercial plant foods, which will balance the excessive nitrogen, and thus increase the bearing capacity of the vines as well as to insure a greater hardiness.

Where the ground is rich in nitrogen, as indicated above, it will pay to apply annually from 250 to 500 pounds of acid phosphate or 300 to 600 pounds of bone meal, and 80 to 160 pounds of muriate or sulphate of potash or 300 to 600 pounds of kainit. The first two will furnish the phosphorous needed and the latter the potash, so essential to profitable fruit growing, whatever the variety may be, the potash giving firmness, and that is a most necessary quality when berries are grown for market that they may keep in good condition in transit. The first year or two cultivated crops can be grown between the rows, but the ground must not be stirred so deep as to cut the roots, else suckers will spring up everywhere and these will make a tangle of vines through which pickers can scarcely find their way when fruiting time comes. To make the gathering of the fruit as easy as possible it is well to confine the plants to the row and drive a stake at intervals, nailing a wire at each side, thus confining the vines between the wires so they are out of the way and still the fruit can be easily reached from either side. This is a good way to serve raspberries also.

Blackberries grow on the short spurs along the cane, and it is well to pinch off the ends of the canes to encourage the forming of as many spurs as possible. The fruit grows only on wood one year old, and when through bearing for the season the canes should be cut out to give room for new ones which are to bear the succeeding year. Another point, too, is that, if possible, the ground between rows should be mulched heavily just before the fruit is ready to be picked, that it may retain moisture and not be packed too hard by the feet of the pickers. If this is not possible it would be a very good idea to cultivate the patch late in the day after the pickers have gone over it to loosen the soil and conserve the moisture, so as to help in maturing the crop and to make sure of a good yield the succeeding year. There are many good varieties, and the nurseryman will readily advise what kinds are best for certain localities. They will also tell you that orange rust is the only disease of any consequence to be feared, and this can be controlled by spraying with bordeaux mixture, first cutting out and burning all plants showing signs of the disease.—D. C. Cornman, in Colman's Rural World.

## EAT APPLES

By P. Devlin, Ponticton, British Columbia

Come, take heed to Doctor Fills,  
Eat apples!  
Throw away your doxy pills,  
Eat apples!  
If in chops you must invest,  
Though your stomach wants a rest,  
Do that which you know is best,  
Eat apples!

If you're feeling rather blue,  
Eat apples!  
When barleycorn has proved untrue,  
Eat apples!  
Then you'll soon recuperate,  
And dodge a most unwelcome fate,  
You know it never is too late, if you  
Eat apples!

When you go to meet your Eve,  
Eat apples!  
If she says that you're her Steve,  
Eat apples!  
She will breathe the fragrant odor  
Of sweet pippins in October,  
And at least she'll know you're sober,  
Eat apples!

## Epitaph

Here lies the good old Doctor Fills,  
Well he prescribed for all our ills;  
Here's hoping that he'll get full mention  
At the roll call of the last convention.

**T**HE price paid for farm produce is determined largely by its condition when delivered to the consumer. The question of transportation was a very serious one a decade ago, inasmuch as the roughly constructed vehicles, which were then used to transport perishable goods to market, were the cause of such a large shrinkage. The farm wagon is one of the oldest and most necessary vehicles in existence. Its greatest improvement during the last twenty years has been in the addition of bolster springs, which make it practically a spring wagon. Farmers in general, in order to obtain the very highest prices for their vegetables, fruits, eggs, etc., are now equipping their wagons with good bolster springs, and have in some cases actually saved the price of a pair of bolster springs in a single load. The Harvey Spring Company, of Racine, Wisconsin, makes a specialty of high grade bolster springs. They are made to fit any wagon and are guaranteed to transform the hardest running farm wagon into an easy riding spring wagon. Farmers interested in securing better prices for their produce should drop a card to the Harvey Spring Company, 784 Seventeenth street, Racine, Wisconsin, and ask for their catalogue and particulars regarding their free trial offer.

Editor Better Fruit:

Your December number contains a wealth of knowledge. Yours truly, Henry Engel, New York.

**G**ROWING GOOSEBERRIES.—Plant in good rich soil and give a liberal dressing of manure every season. Regular pruning every year is essential for the production of fine fruit. The English varieties, especially, do best in partial shade and should be heavily mulched. To prevent mildew spray the bushes as soon as the leaves appear and also several times during the summer with potassium sulphide, one ounce to four gallons of water.—Exchange.

Editor Better Fruit:

I received the December number, and will say that if the December number is a fair sample of "Better Fruit" I am sorry that I have not been on your list long ago. Yours for better fruit, Chas. Henderson.

Editor Better Fruit:

For business purposes I would rather sacrifice all other publications I subscribe to than be without "Better Fruit," as it is the only paper I know of that keeps fruit growers up to date. In fact, I regard it as indispensable. Yours sincerely, W. J. L. Hamilton, South Salt Spring, British Columbia.

HIGHEST QUALITY

# SEEDS AND SUPPLIES

Send for our handsome 104-page catalog. It tells about the right stock for this Coast. It is compiled and written by a man who knows. His twenty years' experience here enables him to do this and do it right. Some Eastern catalogs are more elaborate, but they are Eastern guides, not Western. Understand!

**ROUTLEDGE SEED & FLORAL CO.**

169 Second Street  
Portland, Oregon



## "Hawkeye Tree Protector"

Protects your trees against rabbits, mice and other tree gnawers; also against cut worms, sun scald, and skinning by cultivation. Cost about 1 cent each. The value of one tree is more than the cost of all the Hawkeye Protectors you will need. Write for prices and full description.

Burlington Basket Co.

### STATE AGENTS

G. M. Westland, Wenatchee, Wash.  
Fair Oaks Nursery Co., Traverse City, Mich.  
Welch Nursery Co., Madison, Ala.  
Chas. Reyburn, Earl Fruit Co., Placerville, Cal.  
Parker Bros. Nursery Co., Fayetteville, Ark.  
C. H. Webster, The Dalles, Oregon  
F. F. Powell, Stevensville, Mont.  
Humphrey Nurseries, Humphrey, Neb.  
Geo. F. Hall, Wendall, Idaho  
Brown Bros. Nursery Co., Rochester, N. Y.  
Elizabeth Nursery Co., Elizabeth, N. J.  
H. C. Baker, Route 2, Tunkhannock, Pa.  
O. K. Nurseries, Wynnewood, Okla.  
Jefferson Nursery Co., Monticello, Fla.  
J. A. Hess, Salt Lake City, Utah  
Denver Nurseries, Denver, Colo.  
Frank Brown & Son Co., Paynesville, Minn.

## SEED CATALOG

READY TO MAIL

The leading Seed Catalog of the West—Lilly's Catalog. Your 1911 crop depends on GOOD seed—send for this Catalog and get the best. Write now to the CHAS. H. LILLY CO., Seattle, Wn.

CATALOG  
Lilly's  
SEEDS  
1911



# Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

# Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

# LUMBER

*Lath, Shingles, Wood, Etc.*

HOOD RIVER, OREGON

**FRUIT** Western  
Soft Pine.  
Light, strong  
and durable.

"Better Fruit"  
subscribers  
demand the  
"Better Box."

# BOXES

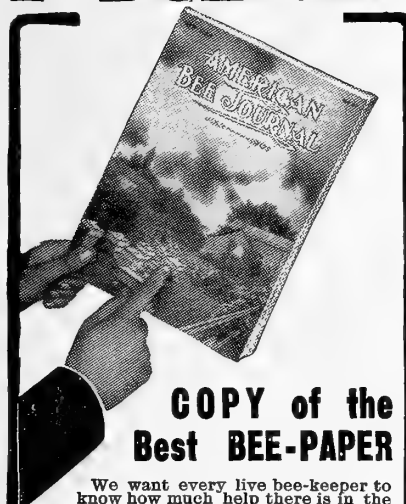
CAN MAKE TWO CARLOADS DAILY

# Washington Mill Co.

Wholesale Manufacturers

Spokane, Washington

# FREE!



## COPY of the Best BEE-PAPER

We want every live bee-keeper to know how much help there is in the "old reliable" American Bee Journal. It is now the brightest, cleanest, newsiest monthly bee-paper published. We want everyone interested in bees and bee-keeping—beginners or experts—to write for a free copy of the

## AMERICAN BEE JOURNAL

Then you will appreciate what a big help it will be to you in keeping bees. Experienced talks by expert bee-men; answers to questions about everything pertaining to bees; special department for women who keep bees; a paper that you'll learn to look for every month.

AMERICAN BEE JOURNAL  
Chicago, Illinois

# HEADQUARTERS FOR CENTURY SPRAY PUMPS

Hose, Nozzles, First-  
class Plumbing Supplies

# C. F. SUMNER

Successor to Norton &amp; Smith

HOOD RIVER, OREGON

# FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

## BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

Bridal Veil Lumbering Co.  
Hood River, Oregon

# W. F. LARAWAY

DOCTOR OF OPHTHALMOLOGY

EYES  
TESTEDLENSES  
GROUND

Over 30 Years' Experience

Telescopes, Field Glasses

Magnifiers to examine scale

Hood River  
Oregon

and

Glenwood  
Iowa

# FREE



# This Book Will Save Your Money.

If your fruit trees or garden plants are infested with destructive pests, it is time for you to get them under control. It is im-

portant that you know just what insects are causing the damage and the proper method of extermination as correctly given in

## "Spraying---A Profitable Investment."

A Handsomely Illustrated Book of 120 Pages.

It gives you the "How" and the "Why" of it in plain language, which is equally as valuable to the experienced as to the inexperienced grower. A great amount of time and money is wasted each year in spraying at the wrong time or with the improper material. How much do you waste? Write 707 Canal Road, Cleveland, Ohio, for a copy of this book.



# THE SHERWIN-WILLIAMS Co.

MAKERS OF INSECTICIDES AND FUNGICIDES

FACTORIES: CLEVELAND, CHICAGO, NEWARK, MONTREAL, LONDON, ENG.  
SALES OFFICES AND WAREHOUSES IN PRINCIPAL CITIES





C. F. WHALEY  
Originator  
Ballygreen System of  
Certified Pedigree  
Trees

## Important to Planters and Fruit-Growers



H. W. REAUGH  
Graduate  
in Horticulture,  
Field Manager  
Ballygreen Nurseries

Through the **Ballygreen System** of selection and certification we make it possible for planters and fruit-growers to secure clean, hardy nursery stock of proven **quality** and **pedigree**, propagated from the best trees in the finest orchards of the famous fruit valleys of the West.

It has been our good fortune to secure for the season 1911-12 scions from the following **prize-winning orchards**:

C. H. Sproat, Hood River, Oregon (winner of Sweepstakes prize, Spokane National Apple Show, 1910, and Chicago Apple Show, 1910, best carload of Spitzenbergs).

O. G. France, Wenatchee, Washington (winner of prize for Winesaps, Spokane Apple Show, 1908 and 1910).

Dick Hart, Toppenish, Washington (winner of prize for carload of mixed apples, Spokane Apple Show, 1910).

We have also secured selected strains and varieties from the orchards of Tedford Brothers and Green Brothers, Wenatchee, Washington (winners of plate prizes at Vancouver, B. C., Apple Show, 1910, and at National Apple Show, 1910); J. B. Holt, Pullman, Washington; W. E. Bowes, North Yakima, Washington; Bear Creek Orchards, Rogue River, Oregon, and others.

Our trees have the **well-balanced roots and tops** that skilled horticulturists aim to secure.

We grow **exclusively**, and are pleased to offer to planters for 1911-12 **Selected Trees of Certified Pedigree**.

### BALLYGREEN NURSERIERS

Please write for price list and pedigree sheet

HANFORD, WASHINGTON

## A NEW INDUSTRY

The Utilization of Wood Waste by Distillation. A general consideration of the new industry, including a full description of the distilling apparatus used and the principle involved, also methods of chemical control and disposal of the products, first edition illustrated by seventy-four engravings, 156 pages. This book is cloth bound. It will be sent to any address, postpaid, on receipt of \$3.20.

A hand book on fermenting, distilling and denaturing alcohol from farm products and wood waste. Trade secrets, no licenses, only a permit, and that is furnished free. Red tape removed, including free tax denaturing alcohol laws. A plain statement of facts for those interested. The latest just out, 280 pages, 60 illustrations, 12mo. cloth. Price \$1.20, postpaid.

Free Tax Industrial Alcohol—Corn stalks and cobs, waste vegetables and wood waste, shavings and old saw dust are now converted into industrial alcohol at ten cents per gallon; sells for fifty cents. Unlimited demand in every village for motors, automobiles, cooking stoves, etc. A five-gallon apparatus makes one gallon per hour; is simple as a corn mill, almost automatic, inexpensive; pays for itself every month. No tax, no licenses; only a permit, and that is free. Orders come in fast. Write today for free farmers' circular No. 9. Address

The Wood Waste Distilleries Company, Inc.  
Wheeling, West Virginia, U. S. A.

## Denatured Alcohol in Solid Form

Cleveland Special Dispatch—September—A well-known Wheeling, West Virginia, chemist has succeeded in producing chunks of denatured alcohol in crystal form, by means of a small infusion of certain acids, very closely resembling physiologically the effects of ethyl alcohol distilled from sawdust. The method employed and the results obtained are somewhat similar to the crystallizing of rock candy or that of saccharine, containing as it does 350 times the sweetening strength of cane sugar, so this alkaloidal crystallized alcohol contains many times the strength of the ordinary denatured fluid alcohol. They will yield 194-proof denatured alcohol, with a greater heating and cooking power for stoves than gasoline, and it is absolutely non-explosive.

A sample can containing 50 solid cubes, a stove and the secret formula showing how simple it can be made at home, will be mailed to you, postpaid, on receipt of \$5.00, or express C. O. D. Address

### The Wood Waste Distilleries Co.

INCORPORATED  
DEPARTMENT H

Wheeling, West Virginia, U. S. A.

# SOLVING THE PROBLEM OF THE CODLING MOTH

BY E. P. TAYLOR, GRAND JUNCTION, COUNTY ENTOMOLOGIST AND HORTICULTURAL INSPECTOR OF MESA COUNTY, COLORADO

ONE of the most common questions heard last summer and fall was: "Why do we have so many wormy apples? Is it the spray, or what is the matter?"

Many have expressed their opinions as to the cause, and I might repeat the conclusions I have formed, with an idea of pointing out ways we may improve our conditions another year.

In the first place I do not think that the quality of the arsenate of lead used this season by our Grand Valley growers was at fault in the main. As evidence of this it may be cited that at least half a dozen different brands of arsenate of lead were used throughout the valley, and, with a few exceptions, comparisons failed to indicate that this was the source of the trouble. I do not wish to convey the idea that all arsenates of lead are the same, and that it is not of greatest importance each season for growers in purchasing them to make sure of both their total arsenic content and the amount of free arsenic which will cause burning. There were individual failures in spraying in this valley last season, just as there have been in other seasons, from lack of thoroughness, disregard for the timing of sprays in relation to the life history of the moth, insufficient hand and power spray outfits to cover the orchards at the proper times and poor kinds of spray pump accessories. I do not think that these details were neglected any more this year, proportionately, than in the five years preceding, for they have always been the bugaboos of the ones who have been placed in the position of advisers to fruit growers in matters of codling moth spraying.

Then why has the loss from codling moth been greater this year than in some years before? The principal explanation seems to lie in the superabundance of worms this year, due to several natural causes. A combination of these natural conditions made codling moth life very easy the past season, so easy in fact that the moth proved a winner in many cases against spraying methods which had won the battle for growers in previous years.

A high percentage of the hibernating larvae came through the winter of 1909-

10 alive, perhaps due, as some have suggested, to a cold winter, with even instead of varying temperatures. The freezing and thawing conditions are more destructive to hibernating larvae, it is thought, than a prolonged and even winter temperature, even though very cold.

Adding still more to the odds of the moth a comparative light crop of fruit prevailed in many orchards, thus concentrating the attack, and, as a final handicap for the worms, the season of their breeding was hot and dry, almost beyond precedent (a condition that is most favorable for their multiplication). The mean monthly temperatures for May, June and July, 1910, exceeded these months for the five preceding years.

As a result of the natural conditions favoring the moth, eggs were deposited and worms hatched during the season in numbers exceeding any record ever made of this pest before. I have, for a number of years in codling moth work, made systematic observations in the orchards for the eggs, and the enormous increase in numbers of eggs encountered this season was very apparent. Five years ago, in this valley, when my observations were kept up for over three months, about 1,000 eggs were tabulated. This year had an attempt been made to record the eggs seen I am afraid I would have been yet engaged, with a goodly clerical force, footing up the totals. Just as an example of a few counts made this season the following may be given from my notes of August 25 in an orchard which had been sprayed. The eggs were found with but a few moments' search either upon the fruit itself or upon the leaves or twigs about it. Many of the empty shells had possibly been washed or blown away before counting, but the following still remained: Two Winesaps, 48 eggs and shells; one Jonathan, 52; one Winesap, 14; one Jonathan, 61; two Jonathans, 108; one Jonathan, 57.

About the eight apples at least 340 codling moth eggs had been deposited, or an average of 42 eggs per apple. Under such conditions is it strange that a few worms should have escaped even the most thorough sprayers? One worm biting through the skin out of the 42 eggs makes a specked apple and one

into the flesh a wormy apple. As a result of such an onslaught of codling moth, here is what happened in a few unsprayed orchards.

On June 18, in an unsprayed Ben Davis orchard, 97.2% of the apples still upon the trees were already wormy by the first brood worms, with an average of more than three worm holes per apple. On the same day counts made in an unsprayed Winesap orchard gave 96.6% wormy, and a third unsprayed orchard on July 1 gave 96.8% wormy, both including only the fruit still upon the trees. In the last case the average worm holes per apple was more than three. These three instances cite the damage done by first brood worms alone.

In the season of 1906 the writer, under the direction of Professor Gillette, conducted very extensive spraying experiments in four separate orchards of the Grand Valley, detailed records being tabulated at the end of the season involv-

## VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.  
HOOD RIVER, OREGON

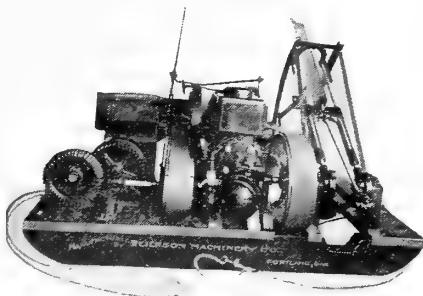
## Paste for Labeling

"PALO ALTO" PASTE POWDER

added to cold water, instantly makes a beautiful, smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss. No spoiled paste.

Paste Specialists  
ROBINSON CHEMICAL WORKS  
349-351 Eighth Street  
San Francisco, California

KING OF THE WOODS



45 CORDS SAWED  
IN ONE DAY

## POWER DRAG SAW

Saves money and backache. Weighs only 1,600 pounds, with 4-horsepower Waterloo engine, water-cooled. Can be operated by one man. Pulls itself forward and backward, up hill or down hill; lots of power and some to spare. Uses only 4 gallons distillate per day, which costs 8½ cents per gallon. Get our descriptive catalogue and prices.

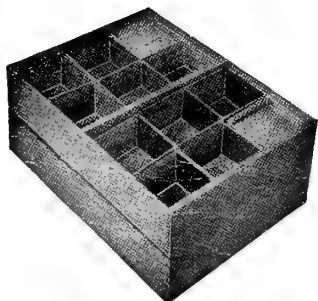
Reiersen Machinery Company  
PORTLAND, OREGON

WATCH THIS  
SPACE FOR  
CUT OF OUR  
IMPROVED  
POWER SPRAYER

WRITE  
FOR  
PRICES

# "NATIONAL" FOLDING BERRY BOXES

ALL STANDARD STYLES AND SIZES WITH CRATES TO MATCH

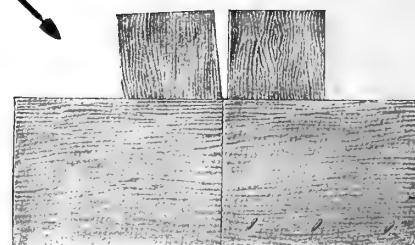
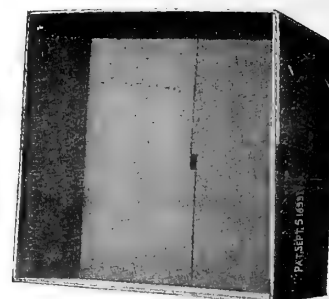


# National Lumber & Box Co.

HOQUIAM, WASHINGTON

**Manufacturers of Every Known Style of Fruit Package**

# BEST



## OUR AGENTS

MULTNOMAH LUMBER & BOX CO  
PORTLAND

H. J. SHINN & CO.  
SPOKANE


RYAN, NEWTON & CO.  
SPOKANE

# BEST BERRY PACKAGE EVER PRODUCED

ing the critical inspection of more than 100,000 apples, representing upwards of 600 bushel boxes. A full report of that work has never been published, but a brief summary was issued by me in Bulletin 119 of the Colorado Agricultural Experiment Station in February, 1907, from which I quote my conclusions as to the number of sprays necessary: "The number of sprays required to control the moth in an orchard will depend principally upon (1) previous infestation of orchard, (2) proximity to other infested orchards, (3) efficiency of earlier sprays and (4) variety of fruit." Although in the G. W. Marchant orchard at Fruita that year 98% Winesap and 95.6% Ben Davis were secured with only two sprays, it was stated in the bulletin quoted, that in common practice there would be more than this number of sprays necessary, and consequently a table was given for the use of fruit growers suggesting approximate times for five sprayings each year, if that many became necessary. In the summer of 1907, while still connected with the office of the Western Slope Fruit Investigations for the State Agricultural College, I carried on another season's codling moth spraying experiments in Hill Bros'. orchard on Orchard Mesa, at that time securing 96.5% perfect fruit with two sprays against the first brood and one against the second, and 97.3% with all three sprays against the first brood.

After several additional years' experience in codling moth spraying, and especially after the past year's observations

in this valley, I am more than ever convinced that my conclusions as published five years ago were correct, and that it is folly for anyone to state arbitrarily the exact number of sprays necessary under all conditions to control codling moth. Statements to the effect that one or two sprays will control codling moth in any section under all conditions to me denote that they are based upon observations too limited or upon experiments with insufficient range of conditions. The sweeping claims that have been made as to the possibilities of the one-spray method for codling moth control have been misleading in that they were not properly qualified as to conditions. Bulletin No. 127, which was recently received from the West Virginia Experiment Station, states that the Western one-spray method gave 97.4% apples free from worm injury, but it is of interest to note that only 34% of the apples became wormy throughout the season in unsprayed orchards. A recent bulletin from the United States Department of Agriculture gives some results in controlling codling moth by a single spraying, the experiments being undertaken as a result of the claims for the one-spray method. These recent government experiments were conducted in Arkansas, Virginia and Michigan, and although from 84% to 93.6% perfect fruit were secured, it is interesting to note that worms were not particularly abundant, as shown by the statement that the percentage of perfect fruit for the whole season in orchards where no spraying at



**O.E. OLSEN LITHOGRAPH CO.**  
FRUIT LABELS  
MADE IN U.S.A.

**1911 MARCH 1911**

5	6	7	1	2	3	4
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Specimen of  
**CALIFORNIA  
SOUVENIR  
CALENDAR**  
2<sup>ND</sup> EDITION  
Size 9x27  
LITHOGRAPHED  
BY US  
IN 9 COLORS

Mailed to  
any address  
in USA or  
Canada for  
10¢ in stamps

**O.E. OLSEN LITHOGRAPH CO.**  
330 JACKSON ST. — SAN FRANCISCO

▼▼▼▼▼  
▲▲▲▲▲

APPLE-BOX LABELS  
PEAR  
PEACH

ETC

WRITE FOR SAMPLE LABELS



TWO-YEAR-OLD ORCHARD AT PAYETTE, IDAHO, PLANTED WITH OUR YEARLING TREES  
(Owner's name furnished on request)

## Your Future Orchard

Would you be satisfied if you could get trees that would make YOU an orchard like the accompanying illustration, in just TWO SHORT YEARS after planting? You can, if you will. This is a two-year-old orchard near Payette, Idaho, planted with our one-year-old budded tree having a strong three-year-old root. The superiority of

this kind of tree is plainly evidenced. If you are contemplating the planting of an orchard, plant the tree that brings you results; don't sacrifice satisfaction and dollars for a few cents in the original cost per tree.

Ask for "Descriptive Booklet of Our Plant"—it's free and helpful.

**OREGON NURSERY COMPANY, Orenco, Oregon**

all was done ran 66.7% in the Arkansas orchards, 53% and 54% in the Virginia orchards and 77.79% in the Michigan experiment.

My own recommendations for the past season in the main were for five sprays, as indicated from time to time in spray warnings, 'phoned to growers or published in local papers, and even this number of sprays under conditions prevailing last year were inadequate to control the worms, although some good results were secured the past season with five sprays.

We may be confident that favorable natural causes, such as parasites, together with the good we are able to do by working bands, scraping the rough tree trunks for the destruction of larvae in the spring, thinning wormy fruit, etc., will give us many seasons in which three sprays will be sufficient, but we will all agree with the fruit grower, who, in

reply to the query as to the number of sprays he is going to give, says, "Spray as many times as it takes to kill the worms."

I am a firm believer in the importance of the first, or calyx cup spray. In Western Colorado it has certainly been far more important in the past five years than any one other spray applied. Every experiment conducted in this valley has taught this lesson most emphatically.

A knowledge of the life history of the moth has taught us that the reason for filling the calyx cup with poison is the fact that a high percentage of first brood worms enter the blossom end of the fruit. Seasons vary, however, as to percentage entering the calyx end of the unsprayed apples. In my work at Fruita a few years ago about two-thirds of all wormy fruit was wormy at the calyx in unsprayed orchards, yet by proper spraying the first time the calyx worm holes were reduced to practically none.

This year, on June 18, while only first brood worms were present, 201 apples were picked from an unsprayed Wine-sap, 192 being wormy. Of the 192 wormy apples 133 were wormy at the calyx, or 69%, and 176 were wormy at the side or stem, or 91.6%. These 176 side and stem wormy apples, however, bore 351 worm holes, and only 27½% of all worm holes were calyx holes. On the same day 88.9% of the total wormy Ben Davis on unsprayed trees on another place were wormy at the calyx, but the side worms were so much more abundant than the calyx holes that they only rep-

## Washington Nursery News

APRIL, 1911

This month closes a most successful season of selling and delivering trees and marks the commencement of growth on our mammoth plant for 1911-12 delivery.

All winter long our large crew was at work grafting scions cut from bearing trees onto pear and apple seedlings which were grown in our own fields at Toppenish. This means that we should produce the best lot of trees this season ever grown at Toppenish, for our home-grown seedlings were the finest ever seen in the Northwest.

Early in March our force "took to the fields" to plant our apple and pear grafts, seedlings, ornamental stock and seeds. In French crab apple seed alone we are putting in ninety-five bushels, enough to produce twenty million apple seedlings if we get a good stand.

One hundred to one hundred twenty-five men and forty-six horses made quick work of the planting, the water was turned onto the mellow ground, the cultivators were started and nature begun her work.

The stock in the fields budded last season is already making a fine growth and we have no reason to expect other than a splendid lot of trees this season.

We need more salesmen in certain unoccupied territories. Drop us a line if you're interested.

We are always pleased to meet our customers. If you're passing through Toppenish don't fail to stop off between trains and make yourself known.

Watch our ads from month to month for nursery news.

**Washington Nursery Co.**  
TOPPENISH, WASH.

Salesmen Everywhere

More Wanted

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

**TRUE-TO-NAME NURSERY**

Phone 2002K

Hood River, Oregon



resented 25.7% of the total. Again, on July 1, on unsprayed Black Ben out of 122 wormy apples, all from the first brood, 86% were wormy at the calyx, while 90% of these apples were also wormy from the side or stem. The total number of worm holes in these 122 apples was 379, so the percentage of calyx injuries was but 27.7% of the total.

These instances are cited not to show that a very high percentage of the unsprayed fruit do not become wormy at the calyx and that the filling of the calyxes is not imperative, but it is my purpose to show that entirely too high a percentage of worms, even of the first brood, enter at the sides of the fruit to hope to control codling moth with a calyx spray only in a year of abundant worms. It is also important to keep the sides of the forming apples coated with poison for the destruction of those first brood worms which do not enter at the

calyx. The calyx spray is applied before the apple is formed, and can surely serve little purpose in coating over the sides of the apple, then only the size of a pea. Some may urge that it is possible to destroy worms which hatch and first feed upon the leaves, since the leaves are usually fairly well unfolded, though not completely so, at the time of the calyx spray and are, therefore, partially coated with poison. Although the higher percent of the earliest eggs are laid upon the upper sides of leaves while the apples are still fuzzy, during the last half of the egg-laying period of first brood moths, which comes after the fruit has become smooth upon the sides, a high percent of the eggs are laid upon the fruit. Does it not seem entirely improbable that very many worms hatching from eggs on the fruit would leave the fruit and go to the leaves to take their first meal?

Editor Better Fruit:

Yesterday I wrote you in regard to my subscription, fearing you did not receive my remittance. I am pleased to say in today's mail I got the finest fruit paper I have ever seen. It is a container of inspiration of the great Northwest, surely, and I hope to have the pleasure of meeting you personally in the near future. Yours truly, Victor Dewein, Warrensburg, Illinois.

Editor Better Fruit:

I beg herewith to enclose a check from my friend, Mr. H. E. Houston, for which please send him a year's subscription to "Better Fruit." Knowing when I have a good thing, I push it along. Yours truly, Guy Seaton, Spokane Bridge, Washington.

Editor Better Fruit:

Your December number of "Better Fruit" was worth a year's subscription. Yours respectfully, Philip Gibbons, Freewater, Oregon.

## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries,  
Plums, Prunes, Apricots, Grapes  
and Cantaloupes

Mixed carloads start about  
July 20. Straight carloads in  
season. Our fruit is the very  
best grade; pack guaranteed

We use Revised Economy Code

## Rogue River Fruit and Produce Association

C. W. WILMEROTH, Manager

Main Office, Medford, Oregon

We will distribute the entire output of the  
Rogue River Valley—The world's most famous  
pears—Our Spitzenbergs won first prize  
in 1909—We use the Revised Economy Code

Loading Stations:

Ashland, Medford, Grants Pass, Eagle Point,  
Gold Hill, Central Point, Talent, Woodville,  
Phoenix, Voorhies, Merlin and Jacksonville.

## Cupid Flour

Has same standing in the Flour  
trade that Hood River Apples  
have in the Fruit trade.

MADE BY

HOOD RIVER  
MILLING CO.

# SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

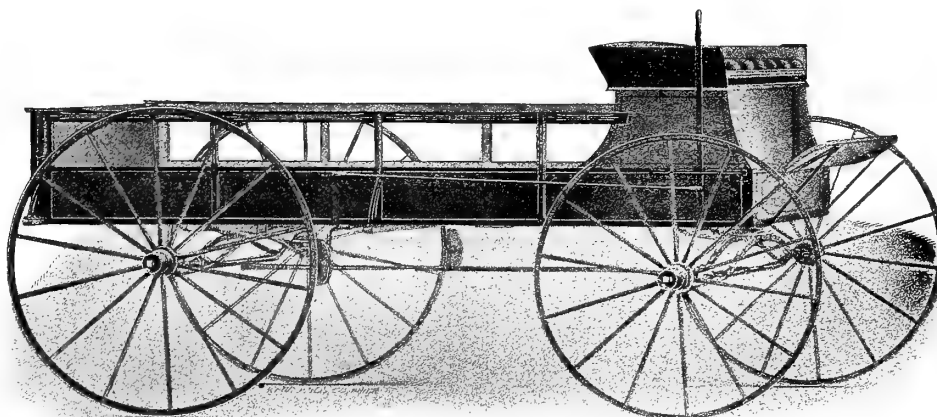
WHOLESALE AND RETAIL DEALERS IN

## Vehicles and Implements

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



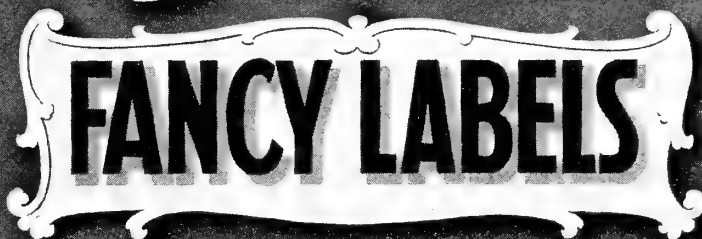
Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide.

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

# *Increase Your Profits!*

By  
Using



on Your  
Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*

## *Schmidt Lithograph Co.*

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

## We Raise the Big Red Apples

I have land for sale in the beautiful Mosier Hills, just six miles east of the town of Hood River, Oregon.

I have the exclusive sale of the East Hood River Land Company's lands.

Some choice tracts in one to three-year-old orchard.

I have had fifteen years' experience in the Mosier district and I have on my list the best buys in this district.

**GEO. CHAMBERLAIN**

Mosier, Oregon

## Why Bother with Irrigation?

ASK

PHOENIX LUMBER CO.

SPOKANE, WASH.

ABOUT

## Cut Over Lands

YOU CAN BUY CHEAP

Double your crop yield.  
Double your income.

USE

# Nephi Land Plaster

Famous throughout the West. The dependable brand that has brought results to the scientific and industrious agriculturists of Oregon and the Northwest for more than twenty years. Highest chemical and most desirable physical qualities of any land plaster on the market.

CAUTION

Insist on NEPHI. Do not risk an experiment.

*Sold by the most prosperous  
dealers in every community.*

**NEPHI PLASTER &  
MFG. CO.**

Main Office: Boston Building  
Salt Lake City, Utah

WRITE FOR BOOKLET

## *Ask the People Using Our Boxes About Quality and Service*

WE MAKE EVERYTHING IN FRUIT PACKAGES

**Multnomah Lumber & Box Co.**

Jobbers of Pearson Cement-Coated Box Nails

Portland, Oregon

## A Great Offer for Our Readers on Special Easy Terms



A Text-Book to  
the Student

A Manual to the  
Gardener

A Library to the  
Teacher

A Treasure to  
the Botanist

A Guide to the  
Amateur

A Companion to  
the Country  
Gentleman

## L. H. Bailey's Remarkable Cyclopedia of American Horticulture

The Cyclopedia of American Horticulture presents the combined labor and experience of the 500 foremost American and Canadian authorities on horticultural subjects, which it has taken years of painstaking editorial work to put into its present convenient and attractive form. These four magnificent volumes place at the disposal of the horticulturist, whether practical, amateur or scientific, an ample and readily accessible account of every subject which at any time may be of interest or practical use in his calling.

### EVERY LOCALITY TREATED

Its range is wide, covering plants, flowers, vegetables, trees, tillage processes, physiological chemistry, tools and implements, cultural discussions, botanical history, biographical sketches, horticultural geography and a myriad items that only constant use will reveal.

### GREAT VALUE TO NURSEYMEN

The set is indispensable to all American libraries, not only because of its position as the foremost work of reference in its field, but by reason also of its great literary excellence and its scientific accuracy, as well as the wealth of cultural data and descriptions it contains. Nor has the scope of the volumes been confined to botanical subjects alone. Such captions as "Diseases of Plants," "Graftage," "Parks," "Perfumery Gardening," "Insects," "Nut Culture," "Railroad Gardening," "Transplanting," "Plant Breeding," "Storage," "Tillage," "Tools," all illustrate the fact that every subject in any way incident to the activities of the horticulturist has been fully covered, commercially as well as scientifically.

### COMMERCIALLY PRACTICAL

It is therefore evident that the appeal of this work is very general. Its subject matter is of almost universal interest, and is treated in such a practical, scholarly and discriminating manner that whoever may be in any way concerned with horticulture, whether as a means of gaining a livelihood, as a mode of recreation, as an outlet for pent-up energy, as a field for scientific investigations, as a method of beautifying his surroundings, as gardener, seedsman, korist, student, teacher, botanist, merchant or country gentleman, will find in "The Cyclopedia of American Horticulture" a work replete with suggestions, abounding in ideas, and fertile in timely hints, philosophic in design, wide in scope and minute in detail—a counselor, guide and instructor ever within call.

Four large quarto volumes, 2,016 pages, 50 full page plates, 500 contributors, 2,800 original engravings, 4,400 articles, 24,400 plant names.

## Our Offer

Better Fruit has always endeavored to supply its readers with the most authoritative and up-to-date matter on horticultural methods, and has therefore made arrangements with the publishers of the CYCLOPEDIA OF AMERICAN HORTICULTURE whereby they may obtain the work on special easy monthly terms. The complete set of four volumes, bound in cloth will be delivered to you for only \$2.00 down and \$2.00 a month for 9 months. Further particulars sent on request.

**SEND  
ONLY \$2**

**BETTER FRUIT PUBLISHING CO., Hood River, Oregon**

# KELLY'S TREES ARE TRUE TO NAME

## 2,000,000 TREES 2,000,000

For fall and spring planting. 350,000 Winesap, 350,000 Jonathan, 200,000 Rome Beauty, 100,000 Delicious and all other leading varieties in Peach, Pear, Plum and Cherry

*Before Placing Your Order Write to*

Tim Kelly, Proprietor Wapato Nursery, Box 197, Wapato, Washington

### HINTS ON HEXAGONAL SYSTEM OF TREE PLANTING

BY F. J. RUPERT, SALEM, OREGON

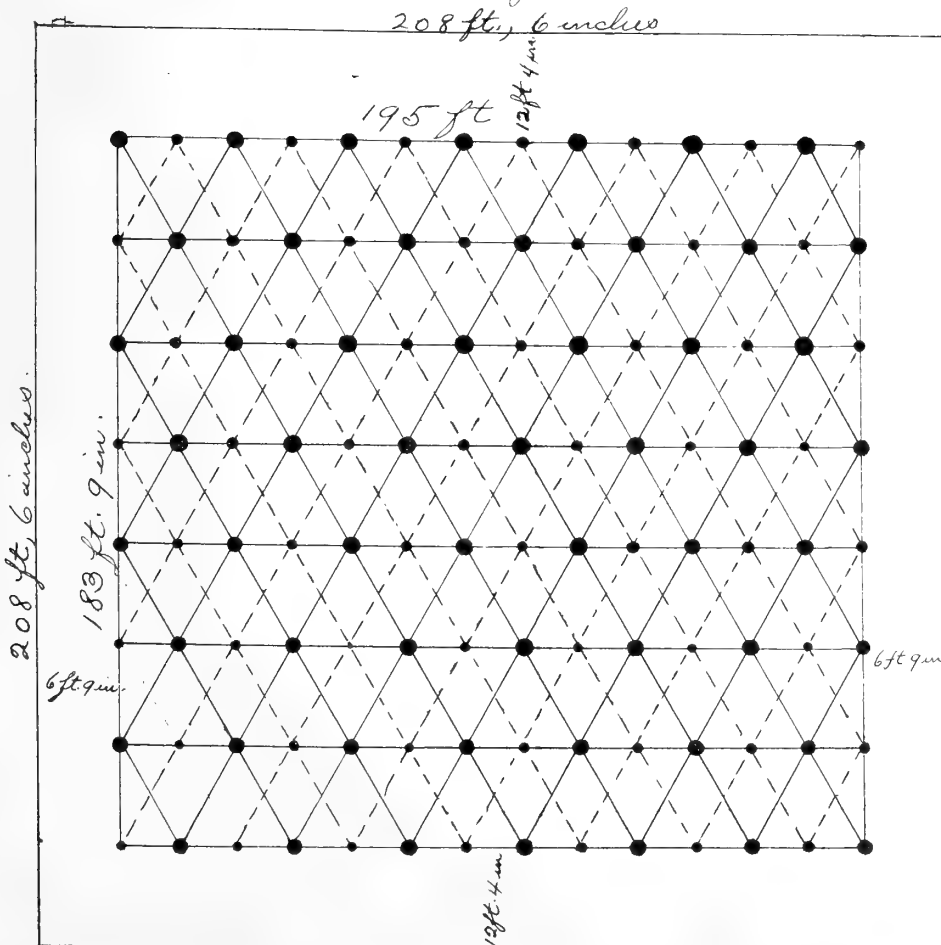
**A**FTER looking over the various hints on tree planting by the square and hexagonal, triangular systems, it occurred to the writer that the latter system might be placed before the planter in a way which would give him a clear and concise idea of just how to lay off his land, either in setting out one or more acres of apples, pears, etc., and provide him with information as to the exact number of permanent trees and fillers required. The article by W. H. Lawrence in the December number of "Better Fruit," together with the illustrations, is truly of value to the planter

who desires to adopt the square method of planting permanent and filler trees, as it shows exactly the number of trees per acre and distance apart of permanent trees as well as distance of fillers from the permanent trees, viz.: Permanent trees thirty feet apart each way, seven rows of trees, seven trees to the row—total forty-nine permanent trees per acre. Fillers in center of each square of four permanent trees, 19½ feet from permanent trees, allowing 36 fillers, or a total of 85 trees per acre. Also, on page 28 of the same issue, Mr. Edward G. Merwin describes to a certain extent the

method of planting by the hexagonal system, showing small diagrams to illustrate the same, also giving information relative to thinning, but there is an absence of illustration to show acreage planting, number of trees, both permanent and fillers, which will be shown by the accompanying diagram.

Here is shown a plat representing an area of 195x183 feet 9 inches, or approximately 42,997 square feet. It will be observed that the width of the area is the greater. We will presume that one acre is to be set in apples. Commence at a point 12 feet 4 inches below and 6 feet 9 inches to the right of upper left-hand corner and set stake for first permanent tree. Thirty feet to the right of this stake set stake for second permanent tree, and so on until seven stakes have been set thirty feet apart, crosswise of the area in a straight line, as shown by the large dots, which represent the permanent trees. Then measure down from a point midway between two first permanent trees 26 feet 3 inches and set first stake for permanent tree of second row. Measuring from this point to the first or second permanent tree diagonally the distance will be thirty feet. Then to the right thirty feet set stake for second permanent tree of second row, and so on across the area. Proceed according to the diagram until you have set stakes for eight rows of seven trees each. Here, instead of having 49 trees thirty feet apart as in the square method of planting, you have 56 trees, each thirty feet apart, a gain of seven trees within the acre area. It is largely the rule with planters in setting out a young orchard, by way of economy in the land, to plant what are known as fillers, or some other variety of fruit, such as peaches, between the permanent trees. Dwarf pears may also be used, they occupying less space than the larger or standard varieties. We will presume

*Square acreage area*



### FRUIT GROWING AND BEE KEEPING

Learn what an ideal combination it makes. "Gleanings in Bee Culture" tells all about it. Six months' trial subscription 25c. 64-page book on Bees and supply catalog free. **THE A. I. ROOT CO.,** Box 83, Medina, Ohio.

A REPUTATION TO SUSTAIN

# The Vineland Nurseries

CLARKSTON, WASHINGTON

Has to offer for Spring Delivery, 1911,  
as complete a line of Nursery Stock  
as can be found in the Northwest

All stock propagated from selected bearing trees.

Experts all over the Pacific Northwest realize that no other nursery exercises greater care than we do, and that

No more reliable stock is grown than we produce.

For fall delivery 1911, and spring delivery 1912, we shall have to offer for the first time the

## RED GRAVENSTEIN

*The New Apple Sensation*

Will tell you more about this wonderful apple, which is purely a fortunate accident of nature, later on.

**THE VINELAND NURSERIES CO.** CLARKSTON WASHINGTON

Owners of The Hanford Nurseries

that peaches are used for fillers. They come into bearing earlier than apples or pears, and also some other fruits, and several crops may be harvested while the permanent trees are coming into full commercial bearing. So long as the fillers do not crowd the permanent trees or render cultivation, pruning, etc., difficult they may remain in the orchard, and produce an income from the spare ground space. When they do begin to crowd the permanent trees by way of obstructing the free inlet of sunlight, or interfere in any way with the proper care of the permanent trees, they may be removed, but they will have paid for themselves many times over before it becomes necessary to remove them.

By further reference to the diagram it will be seen that there are smaller dots between the larger ones. Each small dot represents a filler tree. The fillers thus set will be fifteen feet distant from the nearest permanent tree. In this case the same number of fillers may be used as permanent trees, or 56. The total number of trees to the acre will thus be 112 instead of only 95 by the common square method of planting.

As aforesaid, it is presumed that one acre is being thus planted. As there are approximately 208½ feet on the sides and ends of an acre square of land, in setting the trees within an area of 195x183 feet 9 inches, as shown by the diagram, there will be a margin on both sides of 6 feet 9 inches, and on both ends of approximately 12 feet 4 inches.

## Winfield Nursery, Winfield, Kansas

GROW TREES OF QUALITY

Their new work, Progressive Horticulture, fully illustrated, describes trees of quality in the making

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

Will have for spring delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDE, Nurseryman

H. S. BUTTERFIELD, President

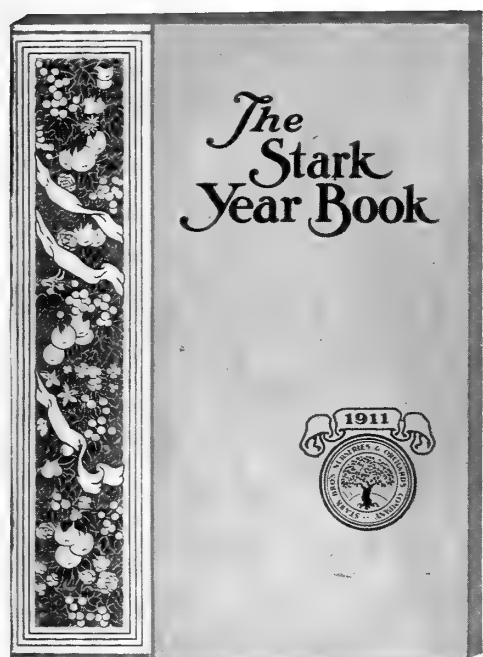


One-year Cherry growing at Monce Nursery

### FOR SALE AT H.G. Monce's Nursery at Nampa, Idaho

30,000 Cherry trees  
12,000 Jonathan  
5,000 Rome Beauty  
5,000 Winesap  
1,000 Plum trees  
Gregg Raspberries  
Cuthbert Raspberries  
Phenomenal berry  
Loganberry  
Gooseberry  
Currants  
Grapes  
Strawberries  
Ten varieties of  
Evergreens  
Oaks  
Hardwood Shade Trees  
30,000 Carolinas  
Price list free





# A Book that is different

THE STARK YEAR BOOK  
IS UNLIKE OTHER NURSERY LITERATURE

SINCE THE STARK YEAR BOOK for 1911 (Volume II) was first announced in these pages the pressure of matter has increased the size from 100 to 120 pages; the number of full page illustrations in natural colors has been increased from 23 to 31, a showing of 165 varieties of fruit and flowers instead of 113. The color work is now most comprehensive, carrying apple, crabapple, quince, pear, peach, apricot, cherry, plum, grape, currant, blackberry, gooseberry, mulberry, dewberry, clematis and roses.

These additions to The Stark Year Book have quite naturally delayed its date of issue a trifle—from January 15th to February 1st—but its readers will be well repaid for the slight delay. More than ever, The Year Book becomes a complete volume of the most helpful and practical guidance to the orchardist and fruit grower.

Two special features of The Stark Year Book deserve special mention. Where practicable, we have appended to our own descriptions, made from first-hand experience and close observation, the experience and observation of many other horticulturists. We have thus hoped to give to them that degree of definiteness and accuracy which is possible only when a description stands side by side with the weightiest possible evidence in support thereof.

We have also tried earnestly to meet many another practical difficulty of the beginner as well as of the more experienced—in a word, afford him the opportunity of getting what will be the best of all aids to success—a condensed knowledge of the whole subject.

If you have not already sent for your copy of The Stark Year Book for 1911 do so at once—fill in and send us the coupon today. Postage 10 cents. The demand for Volume II is tremendous; the edition is limited, and probably will not be reprinted when exhausted.

## Stark Bro's Nurseries & Orchards Co.

Louisiana, Missouri

BF 2-11

Stark Bro's Nurseries & Orchards Co.

Louisiana, Missouri, U. S. A.

Gentlemen—Kindly forward me Volume II of The Stark Year Book, for which I enclose 10 cents in stamps to pay postage.

Name .....

Postoffice .....

County....., State.....

I expect to plant.....trees about.....  
(Number) (Fill in date)

The planting will be done at.....  
(Give location, both town and state)

## SOME METHODS OF GROWING FRUIT IN FRANCE

From the Oregon Journal

NOW has come the season of the year when week-end visitors hear nothing but discussions of the state of the garden at the homes of their amateur farmer friends. The only questions of importance are whether "our corn" will be good, or "our raspberries" as fine as last year.

According to the impression obtained by week-end visitors people sit up nights with their potato crop and cannot sleep for anxiety over the tomatoes. There is no doubt about it that American amateur farmers take their rural avocations very seriously. When a Frenchman fell to discussing the other day what he had seen on his trips about the country, how-

ever, he expressed amazement at the lack of attention to detail.

"In this country," he said, "you just put things in the ground and let them grow more or less haphazard, as far as I can see. You have a soil so fertile that I suppose you can dispense with much that is necessary in our old country. But all the same I think the fruit might be benefited if you did some of the things that every French grower does. France is the country of detail, you know, and we think it pays in fruit growing just as it does in cooking.

"The fruits we pet and pamper most are the peach and grape. The majority of peaches grown in this country would seem, to a Frenchman, to be distinctly of the second order, that is, in the language of his fruit culture, a peach 'de plein vent,' or one grown on trees in an orchard. Between peaches grown thus, 'open to the wind,' and those trained on trellises against walls the French make a sharp distinction.

"The trellis, of 'espalier,' peaches are the only ones that appear on a carefully regulated table, and are universally cultivated. They always command a much higher price than the tree peach, and at Montreuil the fruit has been brought to such perfection that they habitually sell for from forty to eighty cents apiece.

"Even more elaborate is the procedure with fine table grapes. Hothouse grapes

are not highly in favor among French epicures, for they are held to lack the rich flavor of the fruit grown in the open. At the same time the grape is so much in demand as a table delicacy that it is desirable that their season should be prolonged as far as possible into the winter. The difficulty of this situation has been met by a system which, complicated as it is, is quite generally in use.

"The grapes are grown on trellises exposed to the sun and six or seven yards apart, like the peaches. When the clusters are ripe they are put with the stem and leaves in a sort of glass box or bottle, which is placed in a dark room. If the producer is growing for

GET CATALOG AND PRICE LIST  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlementier

Grower of Choice

### NURSERY STOCK

F. W. SETTLEMIER

Woodburn, Oregon

## To the Shrewd Business Man

A commercial orchard is a good income producer while you live, the best real estate agent you ever had when you are ready to sell, and a valuable asset to leave to your widow and orphans when you have reached the end of life's journey.

If an old reliable nursery is of any specific importance to the prospective planter, we kindly ask you to consider with us before buying your trees.

### Albany Nurseries

(Inc.)

ALBANY, OREGON



**ACID BLAST ETCHED PLATES**

*We have installed the only etching machines in the State of Oregon*

*Blast etched cuts have a printing quality which has never before been obtainable with process engraved plates . . . .*

THEY COST THE SAME AS THE OTHER KIND

**WE MAKE CUTS THAT PRINT**

**HICKS - CHATTEN ENGRAVING CO.**

607 BLAKE-MCFALL BLDG., PORTLAND, OREGON

# J. W. Baltes & Company invite your inquiries for Printing

SPECIALISTS IN THE ARRANGING AND EXPEDITING OF FINE WORK

Corner of First and Oak Streets Portland, Oregon

# A WARNING!!

"Probably the most important lesson that the orchardists of the Northwest have yet to learn is that cheap nursery trees are an exceedingly dangerous foundation on which to start an orchard—that a few cents economy on such trees at the start is many many dollars' loss in the long run."

Thus spoke one of America's greatest horticulturists on a recent visit to the Northwest. It is a warning that is well merited, for one can visit scarcely any of the newer fruit sections without being appalled by the number of weak, sickly, undersized young trees that stand as incontrovertible proof of his warning.

Any man who will plant anything but the strongest, most vigorous, healthiest trees—of **known** ancestry—trees whose breeding for generations past insure prolific bearing and disease resisting qualities is bequeathing a legacy of trouble to posterity. The first cost of a fruit tree is an insignificant cost, but the quality and pedigree of that tree is a powerful, **perpetual** factor to your success and those after you.

All of the nursery trees—apple stocks—of the **Hood River Standard Nursery Co.** have three-year-old root systems, with one-year straight tops—big, strong, healthy, vigorous trees that will grow when properly planted, and which will bear from one to three years earlier than the so-called "yearling" tree so promiscuously peddled about, and they will cost you little, if any, more. They are all propagated from the highest earning and best trees of the world famous **Hood River Valley**—trees whose ancestry and past performance is a matter of careful record. They are in every sense a **thoroughbred**, pedigreed apple tree.

For the season of 1910-11 we can offer a limited amount of extra size apple only. Write for catalog and price list.

## HOOD RIVER STANDARD NURSERY CO.

HOOD RIVER, OREGON

## Do you know

That it takes a great deal of science and skill to produce the kind of trees that will make the best growth and give the best satisfaction?

Many people imagine that with a good location one has only to plant the tree in the spring and dig it up in the fall. This may do for some, but not with us.

We took particular pains to secure the best location here in the Yakima Valley, where the soil is exceedingly rich and well drained, and where the growing season is long.

By our constant cultivation during the growing season, and otherwise assisting Nature whenever possible, we turn out a fine, stocky tree with a splendid lot of healthy, fibrous roots, unsurpassed anywhere.

A good root system is the foundation of a tree, and without this good root system you cannot secure the best results.

If you intend to plant now or next season, write for our catalog. It will save you money.

**YAKIMA VALLEY  
NURSERY COMPANY**  
TOPPENISH, WASHINGTON

*More Salesmen Wanted*

the market the bunches are looked at every day, for the slightest speck of imperfection will keep him from disposing of his stock to the best houses.

"The same care in lesser degree runs through all the French grower does. In certain places, but only in a few, the apricot is treated with all the care shown to the peach. It is less profitable to grow, for it does not keep well, except by an expensive process of coating it with wax. The trees, however, are kept very carefully pruned and the production of each is limited.

"Growers have a pleasant way with strawberries. This berry's flavor is, as everybody knows, more or less injured by washing, but in this country they sometimes become so dirty that there is no alternative for the careful house-keeper. In France they are never specked with earth, because every grower spreads straw neatly under his vines so that the rain can splash up no dirt, nor the wind blow any dust on the delicate fruit. The result is a strawberry as clean as a cherry on its tree.

"Gooseberries and raspberries are raised in quantities for the English market, the former trimmed very low, sometimes 'cradle-shaped,' and the latter trained on wire fences, facing not the sun, but the north.

"All these are the common customs of our country, founded on our national love of perfection in detail. There is another form of careful fruit growing, less sensible and much restricted, on which we can hardly pride ourselves,

### SURPLUS STOCK

We have the following stock in good grades at prices that will please you:

#### APPLE

Baldwin, Bismarck, Black Ben, Delicious, Fall Wine, Gano, Grimes Golden, Hyde King, Jonathan, King David, Ingram, McIntosh Red, Nonesuch, Red June, Rome Beauty, Spitzenberg, Stayman Winesap, Wagener, Whitney, Winesap, Yellow Bellflower, Yellow Newtown and Yellow Transparent.

#### PEAR

Anjou, Bartlett, Comice, Idaho and Winter Nelis.

#### PEACH

Carmen, Champion, Cox Cling, Crawford Early, Crawford Late, Early Charlotte, Elberta, Engalls Mammoth, Fitzgerald, Foreman, Guin, Muir, November, Orange Cling, Phillips Cling, Salway, Slappy, Smock, Triumph and Tuscan Cling.

#### CHERRY

Bing, Black Tartarian, Early Richmond, Eng. Morrilla, Lambert, Late Duke, Oxheart, Royal Ann and Yellow Spanish.

#### PLUM

Bradshaw, Burbank, Damson, Diamond, Grand Duke, Green Gage, Maynard, Wild Goose, Macy and Yellow Egg.

#### PRUNE

Italian, Petite, Silver and Tragedy.

#### APRICOT

Golden, Moorpark, Peach, Tilton and Yakimini.

#### NECTARINE

New White and Boston.

#### NUT TREES

English Walnut, Almond, etc.

#### ORNAMENTAL

Catalpa, Black Locust, Mountain Ash, American Elm, Norway and Silver Maple, Mulberry, and Norway Spruce.

All the above stock clean, hardy and true to name. Write for special spring prices.

**THE SUNNYSIDE NURSERY  
COMPANY**

SUNNYSIDE, WASHINGTON

"Northwest"  
Trees Are Best

"Northwest"  
Trees Are Best

If you are intending to plant Apples, Pears, Cherries, Plums, Apricots, Prunes, Strawberries, Grapes or anything in the nursery line this coming Spring, insist on getting "Northwest" trees. We have all the leading varieties and every tree true to name. Place your order with us and you will get none but the best. *Do it Now.*

## Northwest Nursery Company

G. E. MEARS, MANAGER

Nurseries: Mabton and North Yakima.  
Main Office: North Yakima, Washington.

We want a few more salesmen.

## Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. **Send for prices.**

RAWSON & STANTON, Hood River, Oregon

## Do You Want An Orchard In The Willamette Valley?

In order that we may dispose of our few remaining orchards, we offer a special inducement to purchasers in the way of transportation. This special offer, combined with our low prices, easy terms and a contract with many attractive features, makes this a bargain not to be found anywhere else in the fruit growing districts. They will not last long.

Write for descriptive literature and details of this special offer.

### OREGON APPLE ORCHARDS CO.

Eastern Office, Bloomington, Illinois  
Western Office, 432 Chamber of Commerce, Portland, Oregon

though it shows to what extent art can be applied to the production of luxuries.

"Growers can at once retard fruit and dwarf trees to such an extent that it is possible to purchase during the winter fruit actually growing on little trees small enough to be served, pot and all, on the table. Peaches thus grown (one on a tree only) cost about twenty dollars apiece, other things in proportion, and the fruit is usually sold not to French people, but to visitors with more money than discretion, who think it smart to imitate what they consider the luxury of our gay capital.

"All this care of detail may seem absurd to you who have a country so large and so lavishly productive as America. Still I think it is an open question whether even here, where 'time is money,' so much more than it is in Europe, the expenditure of care and thought on some neglected details might not lead to the financial profit of some growers."

### HAVE RUNNING WATER ON THE FARM

Don't carry water from the pump, but install a

## RIFE RAM

PUMPS WATER AUTOMATICALLY DAY OR NIGHT



The first cost is low, there's no operating expense. Raise water 30 feet for every foot of fall. *Fully Guaranteed.*

If there is a stream, spring or pond within a mile, write for Free Plans, Free Book and Free Trial Offer.

**RIFE ENGINE CO.**  
2525 TRINITY BUILDING, NEW YORK

## QUAKER NURSERIES

We have a large stock of YELLOW NEWTOWN PIPPINS, SPITZENBERGS, JONATHANS, WAGENERS, ROME BEAUTIES, and all of the leading varieties of apples.

We also carry a heavy line of BARTLETT, COMICE AND BEURRE D'ANJOU PEARS.

A general stock of peaches, such as EARLY CRAWFORDS, ELBERTAS, LATE CRAWFORDS, FOSTERS, TUSCAN CLINGS, PHILLIPS, MUIR, EARLY COLUMBIA, Etc.

Small fruits in great abundance, STRAWBERRIES, BLACKBERRIES, RASPBERRIES, DEWBERRIES, GOOSEBERRIES, CURRANTS, GRAPES.

H. B. PATTERSON, MEDFORD, OREGON  
*Special Selling Agent for Southern Oregon*

C. F. LANSING, Salem, Oregon

## NURSERY CATALOG

*New, handsome, instructive, up-to-date, describing*

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

*Free on request. Write now, mentioning this paper.*

J. B. PILKINGTON, Nurseryman, Portland, Oregon

## EMMET NURSERY

THE LARGEST NURSERY PLANT IN IDAHO

OUR SPECIALTIES  
PEACHES—CHERRIES—DWARF PEARS

A fine stock of all standard varieties of Apples, Fruit and Ornamental Trees, suited for the Northwest.

CHARLES P. HARTLEY, Proprietor

EMMETT, IDAHO

## FRUIT GROWERS, YOUR ATTENTION!

Royal Ann, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

MONTE VISTA NURSERY  
SCAPPOOSE, OREGON



AS IT COMES FLAT

# "Save-Time"

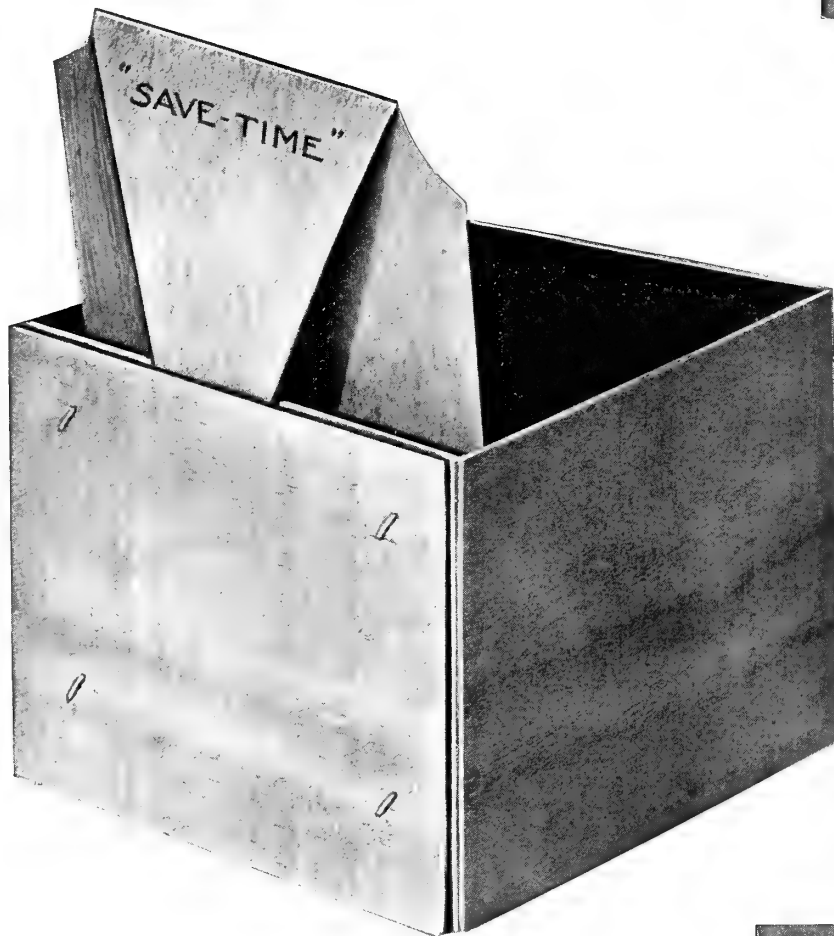
SIMPLY PERFECT

## Folding Berry Box

Made from Pacific Coast Spruce



AS IT OPENS



AS IT FASTENS DOWN

MANUFACTURED BY

### Pacific Fruit Package Co.

Raymond, Washington

H. B. HEWITT, Pres. and Treas.

J. H. HEWITT, Vice Pres.

O. C. FENLASON, Sec. and Mgr.

Agents Portland, Oregon, Territory:

STANDARD BOX &amp; LUMBER CO.

East Pine and Water Streets  
PORTLAND, OREGON

WASHINGTON MILL COMPANY

Agents Spokane Territory

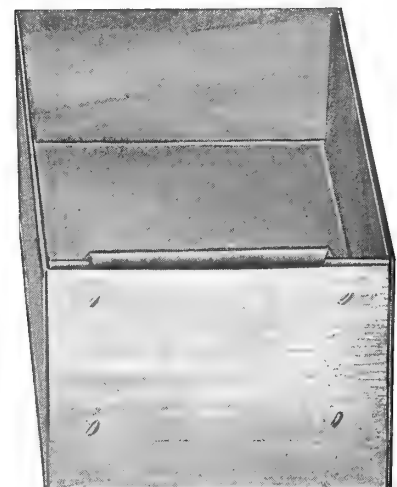
Spokane, Washington

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

EASILY MADE UP

NO BREAKAGE  
OR WASTESOLID ONE-PIECE  
BOTTOM

VERY RIGID

NO STAPLES  
IN CONTACT WITH  
CONTENTSREMAINS IN  
PERFECT POSITION

AS YOU FILL IT

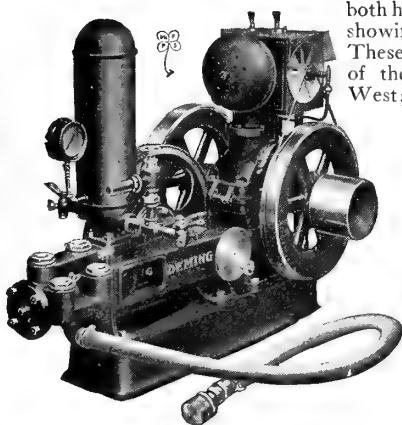
DON'T STAPLE  
SAVE YOUR TIME  
WHEN YOU  
NEED ITPICKERS WILL  
SET UP THIS BOX  
IT IS SO EASYPACKED  
THREE BUNDLES  
TO A  
THOUSANDASK YOUR  
DEALER OR WRITE  
OUR AGENTS  
OR US AND DO IT  
EARLY



## A Mighty Good Sprayer Built for Real Service

The Deming "Premier" Power Sprayer, illustrated below, has now been on the market for more than three seasons, and scores are in use everywhere. The engine can be depended on to run when wanted; the pump develops a high pressure—200 to 250 pounds—and the whole outfit is put together to last. That's also true of more than 20 other

### Deming Spray Pumps



both hand and power, which we're showing in our 1911 Catalogue. These machines are used in some of the biggest orchards of the West; progressive growers and well-posted experiment stations unite in commending them.

Write for Catalogue. We'll supply you direct or will refer you to a dealer in your locality.

First prizes were awarded Deming "Century" Barrel Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November 10-19, 1910.

**CRANE CO., Pacific Coast Agents**  
Portland      Seattle      Spokane      San Francisco  
**THE DEMING COMPANY, 870 Depot Street, Salem, Ohio**  
*Manufacturers of Hand and Power Pumps for All Uses*

## The Great Many-Purpose Irrigation Machine

It will cut your drainage ditches;  
Stir your soil; Level your land;  
Cut laterals; Cut your sage-brush;  
Throw up dikes and grade roads;  
Pick up dirt—carry it—and drop it  
where you want it.

## 20th Century Grader

### The Original One-Man Machine

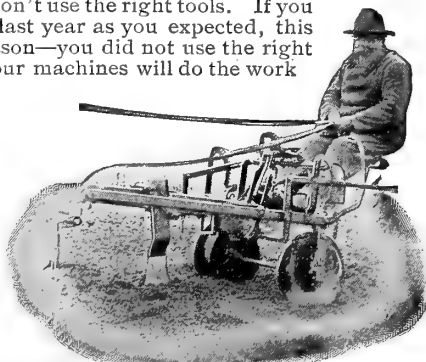
The 20th Century weighs but 600 pounds. One man with two or four horses operates it. Turns in 10-foot circle. Does twice the work of the big, heavy grader with four horses with half the effort.

Mr. Fruit Grower—you can't expect big returns from your work if you don't use the right tools. If you did not do as well last year as you expected, this is probably the reason—you did not use the right tools. If one of your machines will do the work of several expensive ones it means bigger profits at the end of the year.

You shouldn't be without a 20th Century Grader on your place for it has a score of uses.

Let us tell you what others say of it. Send postal for detailed information about these wonderful machines.

**THE BAKER MANUFACTURING CO., 542 Hunter Bldg., Chicago, Ill.**



## Spray Your Fruit for Codling Moth with Grasselli Arsenate of Lead IT IS THE BEST

We are now ready to demonstrate the correctness of our statement from a practical standpoint.

We give you the following names and addresses of the winners of the Grand Sweepstakes prize of \$1,000 for the best car of apples shown at the National Apple Show, Spokane, Washington:

1908—M. Horan, Wenatchee, Washington.

1909—Tronson & Guthrie, Eagle Point, Oregon.

1910—C. H. Sproat, Hood River, Oregon.

All sprayed with Grasselli Arsenate of Lead.

Bear in mind that this material was used at three different points, and during three different seasons. Does this not demonstrate to your satisfaction the superiority of Grasselli Arsenate of Lead, both as to locality and climate in which it may be used?

If so, it will not be necessary to ask yourself the question, "What Arsenate of Lead shall I use this season?" You will order Grasselli Brand.

Do not buy Arsenate of Lead on arsenic contents alone. Bear in mind when buying this spray that lead should be given equal consideration with arsenic, because it increases the adhesive properties and reduces to a minimum foliage injury.

### DISTRIBUTERS IN THE NORTHWEST:

Inland Seed Co., Spokane, Washington  
Hardie Manufacturing Co., Portland, Oregon  
Samuel Loney & Co., Walla Walla, Washington  
Missoula Drug Co., Missoula, Montana  
Western Hardware & Implement Co., Lewiston, Idaho  
Salem Fruit Union, Salem, Oregon  
Hood River Apple Growers' Union, Hood River, Oregon  
C. J. Sinsel, Boise, Idaho  
Yakima County Horticulturists' Union, North Yakima, Washington  
Darrow Bros. Seed & Supply Co., Twin Falls, Idaho  
Rogue River Fruit and Produce Ass'n, Medford, Oregon  
And in all consuming districts.

WRITE THE ABOVE, OR

**H. N. LYON, Northwestern Representative**  
505 Concord Building, Portland, Oregon,  
for name of nearest distributor

### THE GRASSELLI CHEMICAL CO.

*Established 1839*

**Main Office, Cleveland, Ohio**

St. Paul, Minn.  
Chicago, Ill., 2235 Union Court  
New York City, 60 Wall Street  
St. Louis, Mo., 112 Ferry Street

New Orleans, La.  
Cincinnati, Ohio  
Birmingham, Ala.  
Detroit, Mich.

## For Orchard Cultivation This Harrow Has Made Good

The "ACME" is the only implement you need to follow the plow in any kind of ground. It works either irrigated or dry farms. The sharp, sloping coulter on the "ACME" cut through the sod or stubble turned under by the plow, and do not drag it to the surface. The "ACME" is a perfect weed exterminator and mulcher, and will keep down weed growths in all orchards.

### ACME Pulverizing Harrow, Clod Crusher and Leveler

is also the best Harrow for general farming, and for fitting soil for grains, alfalfa, etc., because the coulter work every inch of the soil, cutting through to the under soil, which other harrows leave lumpy and full of air spaces, pulverizes and then compacts this under soil and leaves the top soil loose. Soil harrowed with an "ACME" will attract and conserve all the moisture for the benefit of the growing crops. Made entirely of steel and iron. In sizes to suit every one—3 to 17½ feet wide. Each and every part guaranteed.

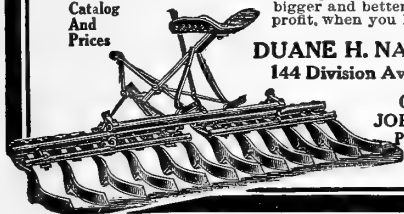
**Keeps Down Weed Growths—Produces Ideal Surface Mulch—No Tree Roots Injured by The Coulter—Branches Not Disturbed by Horses.**

Write for  
Catalog  
And  
Prices

Send for our combined catalog and booklet—"Preparation of The Soil," which will mean bigger and better growth for you and more profit, when you have read it.

**DUANE H. NASH, Incorporated**  
144 Division Ave., Millington, N. J.

GENERAL AGENTS:  
**JOHN DEERE PLOW CO.**  
Portland, Ore., Spokane, Wash.



H. C. POOR,  
Redlands, Cal.  
Champion Box Maker  
of the World.

*W. H. Benton*  
Manager  
*San Monte Fruit Company*  
(Incorporated)  
*Apple Packers and Shippers*  
Watsonville, Cal.

(COPY)

Mr. A. C. Rulofson, Pacific Coast Agent,  
J. C. Pearson Company,  
San Francisco, California.

Dear Sir:—

Replying to yours asking why I prefer "Pearson nails" to the other brands, I have to say in reply that I have been making boxes, crates and other packages in the apple packing houses at Watsonville, in the oranges and lemon business in southern and central California, and in the deciduous fruit business of central and northern California, and in Oregon for eight years.

I very much prefer the Pearson Cement Coated nails to any other in making fruit packages for the reason that the nails are more uniform than any other brand I have ever used. The Pearson nails are well pointed, and have a good head, and the kegs contain very few nails that have to be thrown out on account of imperfection. I find the wire stiffer consequently the nails drive better than any other make. This is particularly true in machine nailing. When nailing by hand I use a stripper in both box making and lidding and find that the Pearson nail works more freely and easily in a stripper than any other make of nails that I have ever used, and I have used all kinds.

Hoping you will find this a complete answer to your inquiry, I am,

Yours very truly,

*H C Poor*

NOTE: Mr. H. C. Poor won the Box Making contest for the world's championship at Watsonville, Cal., on October 17, 1910, making 93 perfect standard apple boxes in one hour, thereby establishing the world's record and winning the championship. The above testimony should be convincing coming from an expert box maker.

J. C. PEARSON CO.

## LIVING ON THE LAND, SUCCESSFUL FARMER'S WIFE

From the Des Moines Capital

SO far as success goes the wife of a farmer in the western part of the State of Iowa tells a very good story. It is a story of success at farming. With her husband, she paid for some of the land as high at \$45 per acre. It is another case where constant work and the proper kind of economy won out. In a letter from Ogden, Iowa, to the Capital, "A Farmer's Wife" says:

"In September, 1892, sixteen years ago, my husband, then a young Illinois man 26 years of age, started northwest to seek a home. Going first to Minnesota, from which state he turned with apparent disgust, returning to Central Iowa, where he secured an eighty-acre farm with a three-room cottage and small stable for \$2,800, paying down \$1,000, money he had saved from his wages as farm hand, and giving a mortgage on the land for \$1,800 for five years at eight per cent.

"In the spring of 1893 we were married and came to Iowa to live on this farm. Starting in with two good horses, a plough and harrow, wagon and corn planter, two cows, one dozen chickens, we went to work with a determination to win. The first year we did some tilling, built a cellar, plastered and painted our cottage, bought some machinery, paid our interest and had \$100 to pay on principal. In the fall of 1895 we purchased another forty acres adjoining the original eighty, paying \$42.50 an acre, or \$1,700.

"At the close of the year we always pay all of our debts, our taxes and interest, and always have a snug sum to pay on principal, making it a point to pay the cash for everything we buy, so far as possible. We are firm believers in the motto, 'Pay as you go and then you won't owe.' Have never run a store bill to exceed \$10. It is so much easier to pay for an article when you get it than after it is gone.

"The spring of 1898 found us free from debt, with some money on hand, so we bought another 120-acre farm, paying \$45 an acre, which we have paid for by working hard and keeping everlastingly at it. This farm we have always rented out at \$3 and \$3.25 an acre.

"In 1901 we purchased another forty, paying \$70 an acre, which we have paid for by close farming, raising horses, cattle and hogs to sell, milking from five to eight cows, raising about 200 chickens a year. We have never kept a hired man, preferring to do the work alone. In busy seasons I often help do light work in the field, such as raking hay, plowing with riding plow, and picking corn; work that I find healthful as well as profitable, having never been sick a day. I think it is a wife's duty to help meet as well as help eat, and in return the 'better half' helps me wash and churn.

"In 1905 we purchased another eighty-acre tract, adjoining the first two named purchases, making us a lovely 200-acre home farm, paying \$70 an acre, with no

## ORCHARDIST SUPPLY HOUSE

**FRANZ  
HARDWARE CO.**

Hood River, Oregon

## D. McDONALD

Hood River, Oregon

Headquarters for  
**FARMING AND ORCHARD**

## TOOLS

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard Tools come to me and get the Best

improvements. This farm we have improved by building an addition to our house, a \$1,000 barn, three wells and windmills and other buildings, besides laying 10,000 tile on the different farms.

"We have been very busy, but still have found time to make seven trips to

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## Profits Without Worry

Are you one of the many people who know the Hood River apples, their quality, and the profits to be derived from producing them?

Are you unable to share in the profits of this wonderful business because you have not enough capital to own an orchard or cannot leave your present pursuits to engage actively in apple culture? If you are, write at once for the prospectus of the Oregon Apple Company of Hood River.

This company has been organized for the purpose of producing a profit from the growing of apples. To this end 300 acres of the best apple land in Hood River Valley has been purchased, and the services of the well-known horticulturist, George I. Sargent, as manager, have been secured. Mr. Sargent will have charge of the planting and care of the tract, which insures from the outset a high-class orchard.

The capital stock of the Oregon Apple Company of Hood River is \$300,000, of which \$60,000 is preferred. The common stock has been subscribed, with which 300 acres of the best land in the upper Hood River Valley has been secured, together with the larger part of the necessary additional operating capital to be supplied by profits derived from the use of the land between the trees. In order to further assist in the development of the tract, this issue of preferred stock is being made. This stock is preferred in dividends to the extent of the first 10 per cent earned, and shares with the common stock on profits from the sale of apples greater than the first 10 per cent.

This stock is issued in \$10.00 shares and is sold at par. Should the investor wish to pay for it in monthly installments through a period of five years, he may do so by paying 20 cents per share per month for fifty months.

A discount of 8 per cent, simple interest, will be allowed for cash.

This stock is non-cumulative and non-assessable.

This proposition lets you have orchard profits without the care, worry and work of operating.

It lets you have orchard profits without the usual large cash purchase price of a high grade orchard.

It gives you a high rate of interest on your savings.

The operating expenses of this large tract will be much less per acre than the operating expense on a small tract of ten or twenty acres.

The equipment needed will be much less than that needed on 300 acres subdivided in the usual ten-acre tracts.

Consequently the profits will be greater.

The assurance to the preferred stockholder rests in the fact that the common stockholders are so confident of the profits to be accumulated from these orchards that they are delivering the land, part of the running capital and services for five years, having no share in the profits from the sale of these apples until the preferred stockholders have been paid their 10 per cent dividend, and are then willing to share equally with the preferred stock in all amounts greater than this 10 per cent. This acts as an insurance to the preferred stock that high class care will be given in order to accumulate profits sufficient to pay dividends on the common stock.

Write for further information today.

### THE OREGON APPLE COMPANY OF HOOD RIVER

21 Heilbronner Building

HOOD RIVER, OREGON

## THE UNKNOWN SNOUT BEETLE OR BUD WEEVEL

BY GEORGE CHASE, MANAGER MODEL ORCHARD, PROSSER, WASH.

THIS pest seems to be practically unknown to "bug men" of the Northwest. It was first brought to my notice in the spring of 1909, and was found on some peach trees in the Grandview, Washington, Orchard Tracts. Some of the beetles were sent to Pullman, and Professor Melander called them "bud weevil," and recommended using an inverted umbrella in shaking the tree over, the old method of catching the plum curculio; but as these come when there is no foliage on the trees they see you before you get close enough for this, and, generally speaking, I don't think

they have been very bad so far, but in the spring of 1910, in early March, they attacked every tree (over sixteen thousand) in the Model Orchard. This orchard is set to apples and pears alternately, and we were about through pruning the apples when they begun working on them, so we did not prune the pears, and they were not damaged much. We first painted all the trees (all one year old) with very strong arsenate of lead, but found it did no good; then we tried rex, and that did no good, because they eat very little of the surface, but eat a hole into the bud and then gouge out

the heart of the bud, completely destroying it. In the meantime it seemed as if every apple tree was doomed; we were not able to get any advice that helped, and it was from reading an article in

### FOR SALE

A 14-acre apple orchard in the famous White Salmon Valley, all set to Spitzenberg and Yellow Newtown apples, with a few Ortleys and Winter Bananas; seven acres six years old and seven acres four years old, and fifty peach trees. A comfortable four-room bungalow with a large fireplace. A beautiful view of Mount Hood. The price is \$700 per acre, with terms. For particulars, photos, etc., apply to M. R., care "Better Fruit."

Within the Shadow of Glorious Mount Hood

*Are Grown the World's Most Famous Apples*

Last year the apple crop of Hood River was valued at \$1,000,000.

About 1,000 acres in actual bearing produced this entire crop.

**\$500 per acre is an average yield.**

\$2,000 per acre is an average price for full bearing orchards.

*Clip out and mail now*

**FIVE YEAR  
Orchards on  
easy payments  
for  
\$500 per acre**

Hood River District Land Co., Hood River, Oregon.

Sirs: Please send me information regarding your easy payment plan of purchasing orchards.

Name .....

Address .....



"Better Fruit" on "Woolly Aphis" that I got a nudge "if kerosene emulsion would kill woolly aphis why would it not kill the snout beetle?" Happy thought, but I had never used kerosene emulsion, and did not know how to make it, and here is where I must take off my hat to Professor Melander, because he had compiled and published in the spray number of "Better Fruit" the spray calendar, and from this I learned how to make the emulsion (10 per cent), and we began applying it. The effect was sure and speedy. We used one-half gallon funnel measures, capped over so as to leave an opening about the size of a match, pouring a small quantity on the ground around the trees, as the beetle is not able to burrow, but lives in the holes and entrances around the body of the tree. One application was found to be enough. There were from a dozen to fifty to a tree.

The beetle is ash-color, about one-third of an inch long, has six legs, a long snout with two feelers on it, and will be found around the trunk of the tree in early March; it is not seen after April 15th; works only when the weather suits

him, likes smoky weather best, eats nights as well as day times, but goes into the ground if it is too hot or too cold. So far I have found the snout beetle on one-year-old trees on ground second year after clearing from sage brush.

♦ ♦ ♦  
**WAY TO MEASURE WATER.**—The quantity of water running in a large or small stream or in a ditch can be measured very simply without the use of a weir, if an approximation of the flow will suit the purpose. First secure the mean velocity in feet per minute, by throwing a floating body such as a light straw or thin stick of wood into the center of the stream, where, of course, the water is flowing the fastest. The stick should be thrown some distance above the point to be measured, so that by the time it gets down it will have acquired the velocity of the water. Measure off fifteen or twenty feet, and take the time consumed by the stick in going this distance. This velocity is much more than the mean velocity of the stream. In fact, take 83 per cent of this velocity as the average. Next secure the cross section by getting the average depth, which can be found by measuring the depth in a number of places at equal distance across the stream, adding them together and dividing by the number of measurements taken. This will give the average depth, which should be multiplied by the width of the stream at the surface for the cross section. Thus if it is found that the float traveled twenty feet in ten seconds, then the stream is flowing two feet per second. If you desire to be more exact, take 83 per cent of this velocity. Then multiply by the cross section and you will have the cubic feet per second.—Exchange.

♦ ♦ ♦  
**LATE WATERING TREES.**—Trees transpire water in the winter the same as they do in summer, but not to so great an extent, of course, as when the trees are in full leaf and in an active state of growth. The gist of the whole matter is simply this: If the ground becomes dry during the winter the trees will be very apt to be injured by the tops becoming dried out. This is one of the principal causes of the so-called freezing dry, a common occurrence in the northern part of Colorado. As a general thing it may be said that late watering is advisable, because the rule will apply in the majority of cases. But it is with irrigation as with most other orchard operations—no set rules can be given; the orchardist must determine these points for himself. If the orchard soil is inclined to hold water, obviously more water will be a detriment. In some cases that we have seen, drainage would be better practice. In other orchards the ground will become very dry, all of which the grower can easily determine, and then he should regulate his practice accordingly.—W. Paddock, Colorado Agricultural College, Fort Collins.

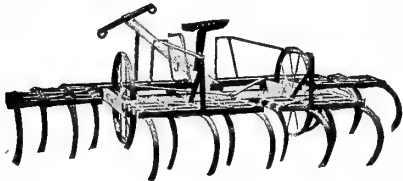
♦ ♦ ♦  
**Editor Better Fruit:**

Your beautiful publication came to us today. It is a credit not only to your section of the country, but to the whole country. Yours very truly, Emory C. Cook, Baltimore, Maryland.

♦ ♦ ♦  
**Editor Better Fruit:**

Enclosed please find my check for one dollar for "Better Fruit." I feel that it is the most satisfactory one dollar that I spend during the year. If I could get as much in return for every dollar invested, Easy street would certainly have a large mansion, with my nameplate on the door. Sincerely yours, J. R. Weatherbee, Portland, Oregon.

## ORCHARD CULTIVATOR



THE FORKNER LIGHT DRAFT HARROW

is the only perfect light-running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. With this harrow one team can easily do the work of two teams with ordinary harrows. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3½ feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expense one-half, even if you have but five or ten acres of orchard. Write today for prices. **LIGHT DRAFT HARROW COMPANY**, Marshalltown, Iowa.

## Better Farming

A John Deere Book  
—Just Out  
A Farmer Can Get It Free

THIS valuable book has eighteen articles on live farm topics, written by the highest authorities. Get the book and a full description of John Deere Plows and Cultivators. They are the implements of quality, made for farmers who want the best. We will send the book and catalogue of John Deere goods if you write for

Package No. 46

Mention the package number sure, then you will get exactly the right stuff.

**DEERE & COMPANY, MOLINE, ILL.**

## RUSH FRUIT TO RAILROAD FROM ORCHARD - AND IT REACHES MARKETS QUICK

THE time lost between the orchard and railroad station is often vastly greater than the time lost between the railroad station and the markets. Too much time is wasted in getting the fruit to the railroad station. That is a big reason why you are so often "docked for spoilage."

There is a better, easier, more economical way. Use an

## International Commercial Car

It saves two-thirds of the time, enabling you to make three times as many trips—it saves actual cash money in feed cost and upkeep, in stable rent, in repairs, and in many other ways which we will gladly tell you if you write us.

The International Commercial Car is simple to operate and keep in perfect running order. All parts are easily accessible.

You ought to get all the facts that prove how much an International Commercial Car means to you in money saved, in added profits, in greater satisfaction, in better health, and more happiness. Write direct for catalogue, or, address nearest branch house.

WESTERN BRANCH HOUSES: Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**

(Incorporated)  
Chicago U S A





**Editor Better Fruit:**

The January number has been received. It is a beauty. Yours truly, C. W. Wilson, Canastota, New York.

**Editor Better Fruit:**

I value your paper very highly and each issue is carefully read. Wishing you continued success, I am, sincerely, A. B. Ballantyne, St. George, Utah.

**Editor Better Fruit:**

Your Apple Show number is one of the most attractive specials I have seen and speaks well not only for your enterprise and equipment, but for the territory you serve so well.—J. W. McEachren, Editor of the Northwestern, Chicago.

**Editor Better Fruit:**

Enclosed find one dollar for your magazine. It is far too good to do without and is a great credit to the fruit business of the continent. I should like to feel that it was going into the hands of every fruit grower in Canada and the United States. Your last number was certainly a beautiful production and you Oregon men deserve great

credit for the degree of perfection you have attained in growing fruit. Wishing you further success for the future, faithfully, Ralph S. Eaton, Kentville, Nova Scotia.

**Editor Better Fruit:**

I have read today the January edition of "Better Fruit." I have been reading your magazine for over two years and it is one of the most attractive and valuable journals that come to my desk, and the January number is a little the best I have seen.—Sincerely yours, H. M. Cottrell, Agricultural Commissioner Rock Island Lines, Chicago.

**Editor Better Fruit:**

Enclosed find one dollar for yearly subscription to your wonderful paper. Fruit grower or not, I wouldn't be without it for many times its price. I have only been in the fruit business about a year and a half. I take three other fruit papers, and I must say that I have gotten more real information out of "Better Fruit" on picking, packing and all subjects relating to orchard management than from all the others put together. Yours very truly, Richard H. Clemmer, Middlebrook, Virginia.

**Editor Better Fruit:**

I have taken "Better Fruit" for three years and consider it the best to be had. Yours truly, R. J. Arnold, Council Bluffs, Iowa.

**Editor Better Fruit:**

I think "Better Fruit" is an excellent paper, the best of its kind that I have read. It is certainly a great help to the fruit grower and every one should include it in his list. Wishing you success, I am, yours truly, Charles Bell, Delta, Colorado.

**Editor Better Fruit:**

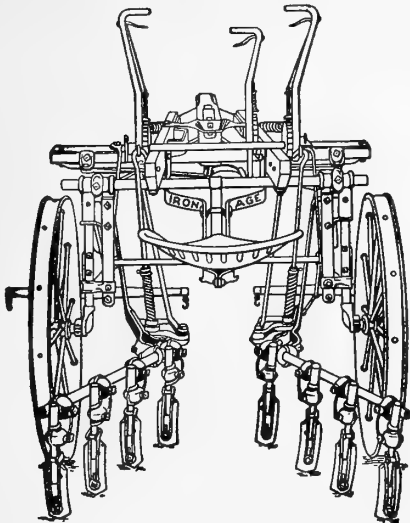
The Bureau of Manufactures of Washington, D. C., informs you that the director of a government experimental fruit station in a European country has requested an American consular officer to supply him with the names of manufacturers in the United States of machinery used in preparing fruit for conservation. Firms interested in this line may secure the name and address of the person to whom correspondence should be addressed by writing to this office and referring to foreign trade opportunity No. 5,798.—Respectfully, A. H. Baldwin, Chief of Bureau.

# 75 Years of Quality Production

## of

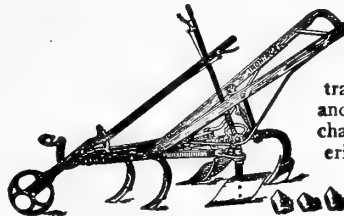
# Iron Age Farm and Garden Implements

Stephen Bateman started the Iron Age business in 1836. He was a farmer himself and knew the farmer's needs. He knew that the progressive farmer always wants the best. He also knew that highest quality in farm and garden implements is always the cheapest in the long run. So he built up the Iron Age business along strictly quality lines. The Iron Age line stands today at the head of the list. This line has always served the farmer well and made a friend of him. Four of the Iron Age line of implements are briefly described below. This line is sold by over 200 agents in the Northwest. The complete catalog, full of illustrations, will be sent postpaid, free of charge, upon the receipt of your name and address. Ask for Catalog No. T



**No. 82 PIVOT WHEEL RIDING CULTIVATOR**

You must cultivate your soil frequently if you expect to get the most out of it. You must have a strong machine and one that is easily operated. It must be convenient of adjustment so as to insure perfectly level cultivation under all conditions. It must be so adjustable so as to cultivate deep or shallow as needed. It must do a variety of work. It must suit the potato farmer, the general farmer and the truck gardener. It must be easily set for use in a wide variety of crops so must have a wide range of adjustments. It must be easily guided so that a man or boy can run it either on hills or level ground. This Iron Age Front Wheel Riding Cultivator is all of this and more too. The catalog will prove interesting. It describes this cultivator in detail.



**NO. 6 HORSE HOE AND CULTIVATOR**

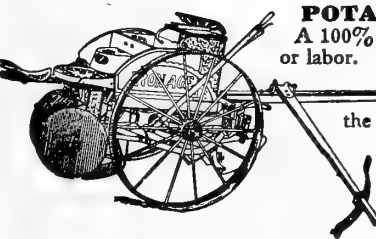
Strong, light and compact. A high steel frame that makes the tool run steady and clear of trash. Several adjustments to side hoes, both sidewise and at different angles. Can be reversed for hoeing and changed from side to side with points forward for covering. As a cultivator expands from 14 to 30 inches.

Made for all sorts of hoeing and all sorts of cultivating—admits of many adjustments to meet different conditions of different vicinities. Hoe standards solid steel. This implement deserves the most careful consideration of all farmers. Described in detail in catalog.



**9 TOOLS IN 1 — NO. 6 COMBINED DOUBLE AND SINGLE WHEEL HOE, HILL AND DRILL SEEDER**

One of the most wonderful machines ever devised — saves time, labor and money. Is simple, strong and convenient. Runs single or double wheel for hoeing, raking, cultivating, plowing, hill and drill seeding, etc. Sows the greatest range of variety of seeds. Distributes small packets with same uniformity as large quantities. Seeds in sight as they pass into furrows. Tool changes instantly from drill to hill or reverse. Drops seeds 4 to 24 inches apart. Adjustments simple and quickly made.



**POTATO PLANTER**—The king of potato planters.

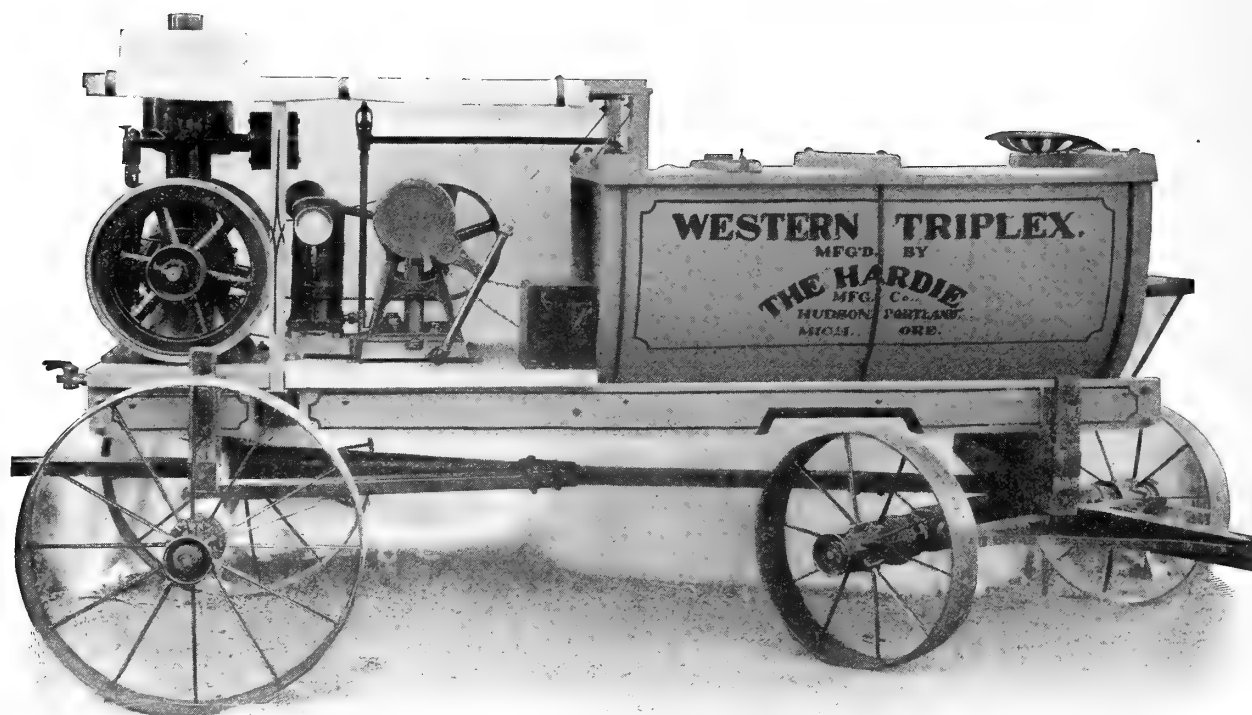
A 100% efficiency implement. No waste land, material or labor. Feeds and drops seeds without injury and in the proper place—every time. Plants and fertilizes at the same time. Yet no fertilizer touches the seed. Iron Age Potato Planter takes many attachments to meet extreme conditions and do special work—such as corn, bean and pea planting, side dressing and ridging. This machine is a money-saver. The catalog tells a lot more than we have room for in this space.

We can give names of some of the most successful farmers in the Northwest who use Iron Age tools

**R. M. WADE & CO.**  
**PORTLAND :: :: OREGON**

**OLD ESTABLISHED**  
 (46 YEARS IN BUSINESS)  
**UP-TO-DATE**

# The HARDIE TRIPLEX



Is built by specialists in Spray Pump manufacturing. Years of "knowing how" and a good factory insures you a sprayer that gives you the pressure and capacity you need, and one that anybody can run successfully all the time.

A cab with curtains covers and protects your machine from weather and spray.

On account of its light weight, your team can haul it anywhere, and its low construction allows you to operate in closely set orchards without damage to fruit or trees.

Our rotary propeller agitator insures you a uniform spraying mixture at all times, and this, with the even high pressure given by our Triplex Pump, gives you the highest yield of perfect fruit.

Yourself and the few tools we send with each machine constitute all the machinists and experts needed for successful operation.

Efficiency, lightness of weight, ease of operation and low cost of upkeep leave in the Hardie Triplex

## *Nothing to Watch but the Spray*

Write today for our 56-page catalog, giving details of construction of our different sizes of power machines, hand pumps, etc.

## The Hardie Manufacturing Company

Hudson, Michigan

49 Front Street, Portland, Oregon

**Editor Better Fruit:**

As a lover of fruits, as well as a prospective producer, I want to congratulate you on the success you are making. You certainly deserve the support of all progressive fruit growers. With best wishes, R. D. Allen, Salem, Oregon.

**Editor Better Fruit:**

Your January number is certainly a hummer. If you keep on there is no doubt but what "Better Fruit" will be the "Country Life in America" of the West. With best wishes, believe me, A. F. Nagle, Assistant Manager "Advertising and Selling," New York.

**Editor Better Fruit:**

By yesterday's mail I received our copy of January "Better Fruit," and I cannot let it alone. I knew you were preparing a rather elaborate edition, but this one lays it all over any previous attempts, in my opinion, for artistic work and for thoroughness on the various articles. You have certainly boosted the National Apple Show to a finish. Your plan of writing up all of the Western shows in one issue was a dandy, and you have no idea how valuable this issue will be to us as a reference work. Throughout our campaign people are always asking for some information concerning other shows and wanting to know about some of the features. By having this issue at hand we can show them so much that it will be invaluable to us.—Sincerely, Ren H. Rice, Secretary Spokane National Apple Show.

**Editor Better Fruit:**

Believing it would be of interest to the readers of "Better Fruit" in general, as well as myself, I write to ask that, if it is not incompatible with the policy of your publication, an article or discussion be published in a future issue pertaining to the following: (1) Are chickens injurious to the growth of fruit trees and the production of fruit on those trees, if allowed the run of the orchard? If so, at what times and in what manner? (2) Are chickens beneficial to the growth of fruit trees and the production of fruit on those trees, if allowed the run of the orchard? If so, at what times and in what manner? (3) Would the effects of chickens be different in the commercial orchard and the home orchard? If so, at what times and in what manner? It is desired that the monetary value of chickens and their products be absolutely barred from consideration in connection with the above; the effect on quantity and quality of fruit being the only thing considered. The above is respectfully submitted in the absence of knowledge as to whether or not similar matter has previously been printed in "Better Fruit."—W. E. Smith, 519 Kosciusko street, Jacksonville, Illinois.

**Editor Better Fruit:**

Through the kindness of Dr. A. E. Kline we are in receipt of several copies of your most excellent publication, "Better Fruit," and have enjoyed the perusal of the interesting articles contained therein. The illustrations are exceptionally good and very nicely arranged. We also sampled one of the apples you brought with you and can truly say that we never have eaten better and probably nowhere near so good. Hood River Valley certainly has them all beat for prime apples, and we also note that the growers are getting wise to the marketing end of the business as well as growing the fruit. With the proper climate and soil, good varieties, thorough knowledge of packing, and organization in marketing, the fruit business is getting on a

basis that means prosperity for the industry. You people have about solved these problems. Was sorry I did not meet you when you were here, but hope the next time you pass through you can find time to call. Thanking you, and with best regards, I remain, yours very truly, L. H. Woodworth, Editor Sutter County Farmer, Yuba City, California.

**Editor Better Fruit:**

We certainly want to congratulate you on the exceedingly splendid number of the January or Apple Show edition of "Better Fruit." This is without doubt the banner number of any fruit magazine ever published and you should feel more than proud of your efforts. Yours truly, Missoula Chamber of Commerce, Missoula, Montana.

**Editor Better Fruit:**

Have just received the Apple Show number and it is a beauty. Yours very respectfully, Jay P. Green, Corvallis, Oregon.

**POTASH NOT REQUIRED.**—The Geneva, New York, experiment station concludes after several years' work that orchard soils in that section do not require potash. It is evident that the element is not only present in the soil, but in sufficient quantity and available. This is also the case in the volcanic ash soils east of the Cascade range, but not so in the Coast section, where rains have leached the potash for centuries, so that the chemist does not find it in sufficient amount for good fruit crops. The berry growers here find by actual experiment that judicious applications of potash for a series of years increases production of berries, besides giving them more firmness for shipping, than where they are deprived of this element. They are preparing to utilize the potash in the liquid manures from their stables; they will buy wheat for egg production, preserving the fertility for the berry fields, and in addition are purchasing muriate of potash salts.—Bellingham Herald.



## VIRGINIA FRUIT LANDS



\$15 to \$50 per acre

Will buy land in the Beautiful Shenandoah Valley that will grow better fruit than can be grown on \$100 to \$200 land elsewhere.

**Close Markets and Low Freight Rates**

Give us a great advantage. Fast freight shipments reach New York in 24 hours. Rate 10 cents per box on apples.

**The Virginia Apple Orchard is a Money Maker**

You can grow apples here at lower cost because nature provides abundant rainfall, and our mild climate, rich soil, cold mountain water, good schools, good roads and best social environment make life very attractive to the newcomer.

Virginia harvested a \$3,000,000 apple crop in 1910. We have high grade apple lands in the Shenandoah Valley, near railroad and good towns, at \$15 per acre and up in small tracts. Large boundaries as low as \$10 per acre.

Write for attractive booklet, No. 2076, complete list of properties and copy of our Homeseekers' Guide.

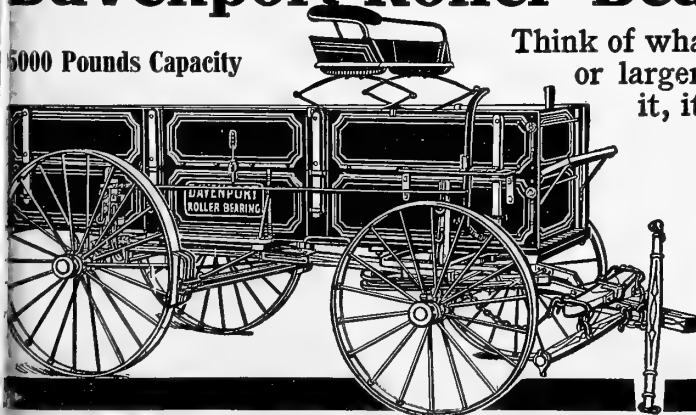
**F. H. LA BAUME, AGRICULTURAL AGENT NORFOLK & WESTERN RAILWAY, ROANOKE, VIRGINIA**

# Sell One Horse

And for the selling price buy a wagon that will pull one horse lighter. That is if you are now using three farm horses you can get along with two; if you are using four, three will do your work with a

## Davenport Roller-Bearing Steel Wagon

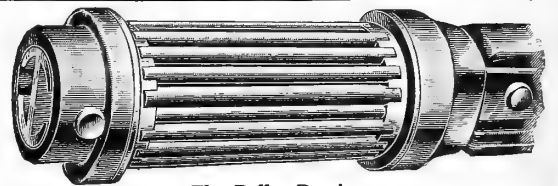
5000 Pounds Capacity



Think of what that means to you. More trips, easier trips, fewer horses, or larger loads, with the same horses and help. Anyway you figure it, it is a money-saving and a money-making proposition for you.

In the Davenport you have a wagon guaranteed for 5000 pounds capacity, with gears of solid steel, rolled into the strongest forms known and trussed like the modern steel bridge. The wheels are steel with strong, round spokes forged solidly into the hubs and hot riveted into the tires. There is nothing to dry out, rot, shrink or work loose. No tires to reset, no breakdowns, no repairs. Oil without removing the wheels. Let us tell you all the facts. You should know what these advantages really mean to you. Then you won't be content till you own a Davenport. It will give you more than twice the service of the best wooden wagon made. And it costs about the same. Now write for Package No. 22.

**Davenport Wagon Company, Davenport, Iowa**



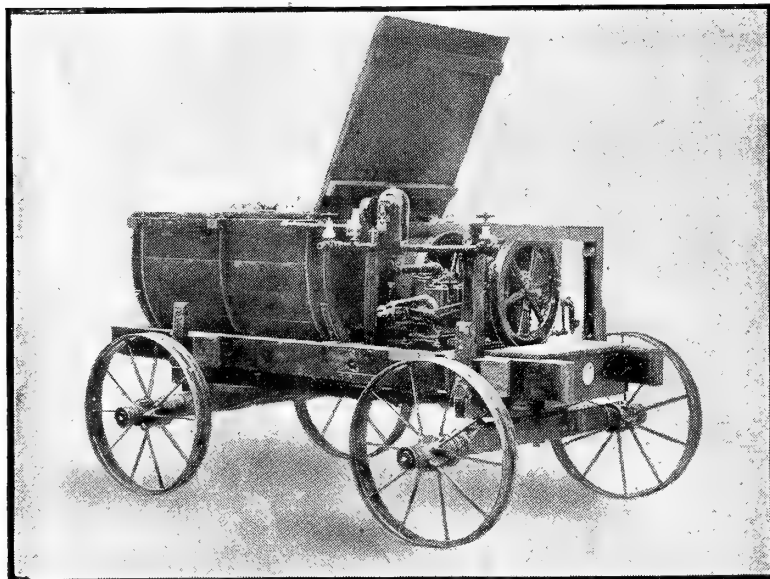
The Roller Bearing.

30% to 50%

Lighter Draft

# NEW POWER SPRAYER

ESPECIALLY CONSTRUCTED TO MEET THE REQUIREMENTS OF THE FRUIT GROWERS OF THE NORTHWEST



After talking with a number of the fruit growers, we have embodied in this Spray Outfit the suggestions which they gave.

The first machines on the market were too heavy (weighing not less than 2,000 pounds). This machine weighs only 1,300 pounds, which is a feature to be considered on hillsides and soft ground.

The machine is built low enough to clear the branches of the trees, being 4 feet 3 inches from the ground. The tank and cover for the engine are so constructed as to serve as a platform for the operator to stand on while spraying down into the calyx. Again it differs from the first machines in that it is very short, being but 4 feet 8 inches wheel base, making it possible to turn short.

This Spray Outfit, with the Fairbanks-Morse one-horsepower engine, direct connected to a special pump designed to give 200 pounds pressure continuously through two hose connections and nozzles from a tank of 150 gallons capacity, appeals to the fruit growers because it embodies every feature they regard as important.

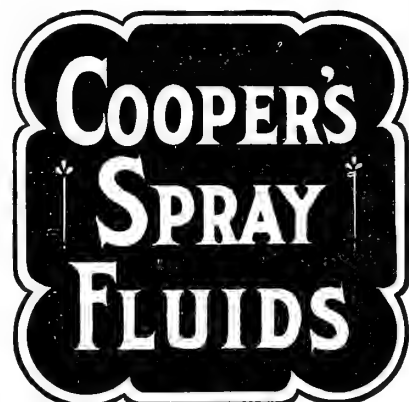
We invite you to investigate this entirely new Spray Outfit. Write for catalog.

## FAIRBANKS, MORSE & COMPANY

PORTLAND, OREGON

SEATTLE, WASHINGTON

SPOKANE, WASHINGTON



**Read what Hood River says**

Hood River, Oregon, Nov. 27, 1909.  
This is to certify that I have used Cooper's Tree Spray Fluids, V1, for killing San Jose scale and found it very effectual.

G. R. Castner, County Fruit Inspector.

**APTERITE**

**THE SOIL FUMIGANT**

DESTROYS INSECTS IN THE GROUND

REDUCES LOSSES SAVES PROFITS  
IT WILL PAY YOU TO INVESTIGATE

Write for 1910 booklet (32 pages)

Testimony from fruit growers everywhere

Agent:

**C. G. ROBERTS**

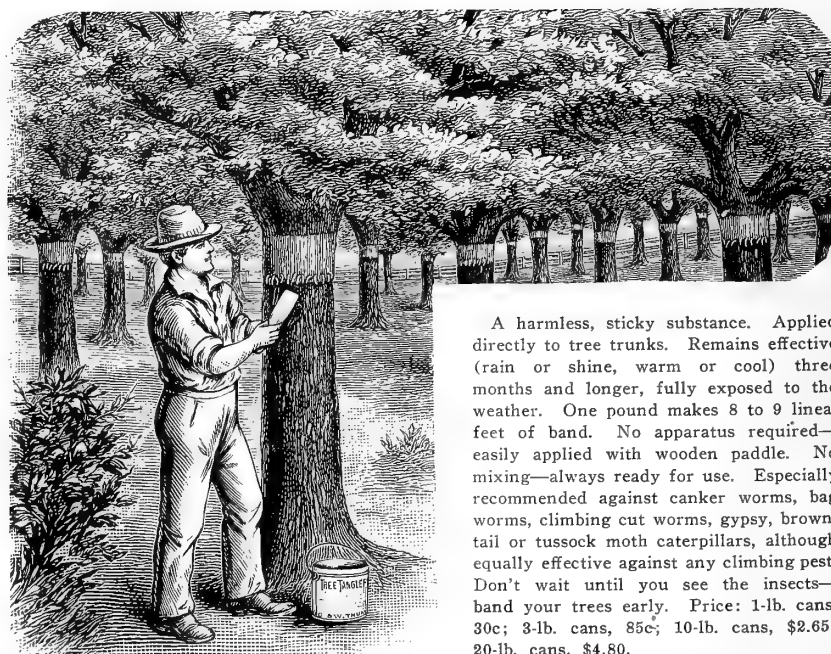
247 Ash Street Portland, Oregon

Sole Manufacturers:

**William Cooper & Nephews**

CHICAGO, ILLINOIS

## BAND YOUR TREES WITH TREE TANGLEFOOT



A harmless, sticky substance. Applied directly to tree trunks. Remains effective (rain or shine, warm or cool) three months and longer, fully exposed to the weather. One pound makes 8 to 9 lineal feet of band. No apparatus required—easily applied with wooden paddle. No mixing—always ready for use. Especially recommended against canker worms, bag worms, climbing cut worms, gypsy, brown-tail or tussock moth caterpillars, although equally effective against any climbing pest. Don't wait until you see the insects—band your trees early. Price: 1-lb. cans, 30c; 3-lb. cans, 85c; 10-lb. cans, \$2.65; 20-lb. cans, \$4.80.

SEND FOR BOOKLET

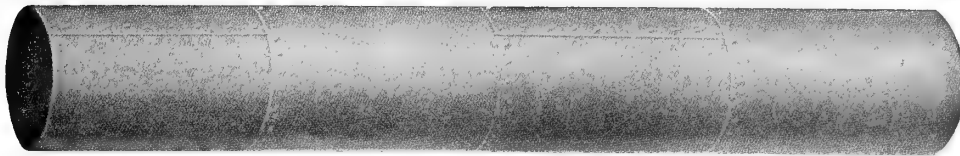
### The O. & W. Thum Company

GRAND RAPIDS  
MICHIGAN

Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot



# ANYTHING IN SHEET STEEL



STEEL PIPES SAVE WATER

STEEL PIPES SAVE LABOR

YOU DO NOT HAVE TO WAIT FOR STEEL PIPES TO  
"SOAK UP" AND THEY LAST INDEFINITELY

WE MANUFACTURE

Galvanized Steel Pipe

Storage Tanks

Galvanized Steel Culverts

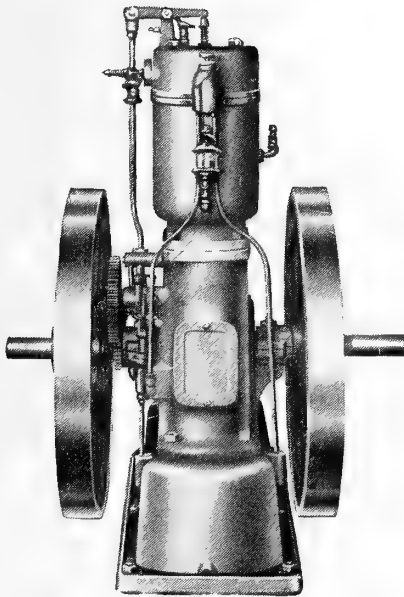
Pressure Tanks

Asphaltum Coated Pipe

Steel Flumes

Columbia Hydraulic Rams

**COLUMBIA ENGINEERING WORKS, Portland, Oregon**



Vertical Engines 2 to 9 H. P.  
Horizontal Engines 1 to 60 H. P.

## IRRIGATION NECESSITIES

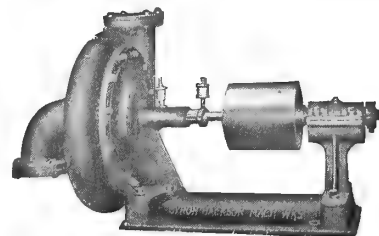
The man contemplating an irrigation proposition is interested in a gasoline engine and a pump properly suited and adapted to the work to be done. We have had experience in this line and are in a position to recommend an outfit suited to the requirements.

*Our Stover Engine* is simple, powerful and efficient; has given satisfaction in this field for years and is in use by several thousand owners.

Our stock of pumps is large and of every kind and character suitable to various requirements.

We are in a position to and will furnish estimates on irrigation propositions.

Send for 32-page catalog of Stover engines and state requirements.



Centrifugal Pump

**Mitchell**  
LEWIS & STAYER CO.  
PORTLAND  
OREGON



# HOOD RIVER

THE MODERN GARDEN OF HESPERIDES

*“Within the Shadow of Mighty Mount Hood”*

“Where the rain and sunshine meet.” There grow the finest and most delicious apples in all the wide, wide world. Every apple picked by hand and packed in the most scientific manner under the direct and personal inspection of the Board of Directors of the

## HOOD RIVER APPLE GROWERS' UNION

We take pleasure in advising the trade that for the third consecutive time practically the entire crop of this noted valley has been purchased by us, consisting of the noble NEWTOWN PIPPIN, the delicious SPITZENBERG, the magnificent GOLDEN ORTLEY and such other varieties as grow to perfection only in the Hood River Valley.

# Steinhardt & Kelly

NEW YORK

THE MOST EXTENSIVE OPERATORS IN HIGH CLASS FRUITS IN THE WORLD

VOLUME FIVE

NUMBER ELEVEN

10 CENTS  
A COPY DOLLAR A YEAR

---

OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

---

# BETTER FRUIT

*MAY, 1911—ROSE FESTIVAL EDITION*

---



*Engraved by Hicks-Chatten Engraving Company, Portland, Oregon*

Every fruit grower should have a garden of roses surrounding his home. It not only beautifies it, but increases its value. "Better Fruit" recommends and urges every fruit grower to visit this year's Rose Festival, June 5th to 10th, 1911, Portland, Oregon

---

PUBLISHED BY BETTER FRUIT PUBLISHING COMPANY, HOOD RIVER, OREGON

Fruit Pests Are Unknown  
in the famous

# BitterRootValley

on Montana's Pacific Slope  
You save the labor and cost of spraying

## Smudging Is Unnecessary

There has not been a killing frost on the bench lands in the growing season in the history of the Valley.

There are no dust storms.

Pure water and sunshine 300 days in the year make ideal health conditions.

Net profits annually range from \$2,000 to \$5,000.

Undeveloped land in this remarkable fruit district can still be bought for **less money** than is asked in other valleys less perfectly adapted by nature for successful fruit growing. Values now range from \$250 to \$350 per acre.

Developed tracts of ten acres, with contract to cultivate and care for same to five-year maturity, cost only \$5,000 if purchased now. Easy terms of payment for both developed and undeveloped land.

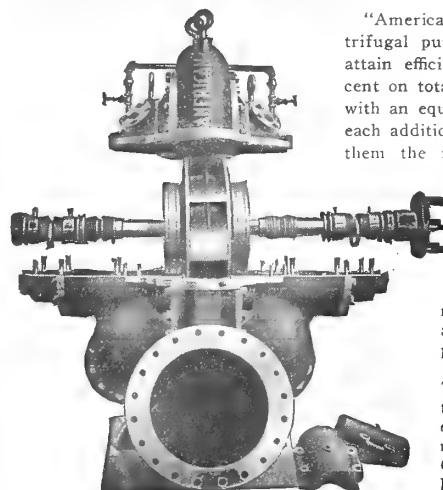
Detailed information upon request.

## Bitter Root Valley Irrigation Co.

First National Bank Building, CHICAGO

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
in 1909 to pumps were awarded to

## "AMERICAN" PUMPING MACHINERY



"American" single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

"American" centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for "Efficiency Tests of American Centrifugals," by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## The American Well Works

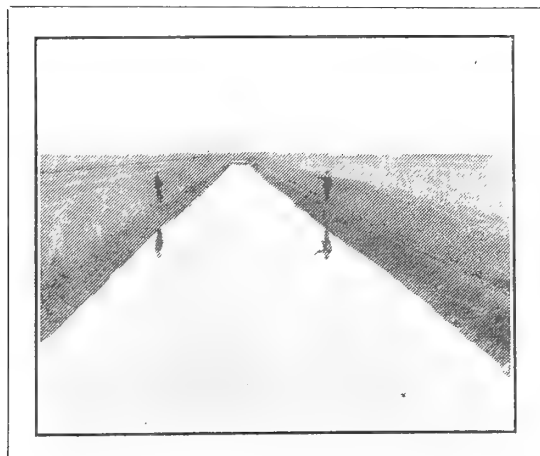
General Office and Works: Aurora, Illinois, U. S. A.  
Chicago Office: First National Bank Building

PACIFIC COAST SALES AGENCIES:

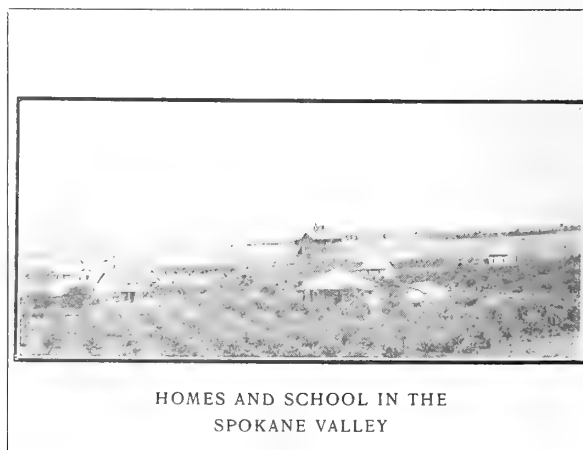
70 FREMONT STREET, SAN FRANCISCO  
341 SOUTH LOS ANGELES STREET, LOS ANGELES  
SECOND AND ASH STREETS, PORTLAND, OREGON  
1246 FIRST AVENUE SOUTH, SEATTLE  
305 COLUMBIA BUILDING, SPOKANE

# THE GRAVITY IRRIGATION SYSTEM OF THE SPOKANE VALLEY

Has developed the greatest apple and berry district of the West. **Nearness to market** causes larger net returns than in any other locality. Seventy-two trains daily through the valley. Every modern convenience. "Life's journey is swift; let us live by the way." The Spokane Valley has the unique distinction of being the only established apple district near a big city. Think what that means and investigate. Five thousand contented settlers.



THE BEST  
IRRIGATION  
SYSTEM  
IN THE  
WEST



HOMES AND SCHOOL IN THE  
SPOKANE VALLEY

SPOKANE VALLEY IRRIGATED LAND CO.  
401 SPRAGUE AVENUE, SPOKANE, WASHINGTON

# NORTHWESTERN FRUIT EXCHANGE

Offers to local fruit growers' associations in the States of Oregon, Washington, Idaho and Montana a **highly organized**, efficient sales service, based on the principle of f.o.b. sales. It has passed through its first season with high success, as attested by voluntary letters of warm approval, received from **every one of its members, without exception**. Its offices in the Spalding Building, at Portland, are being enlarged and extended, and it has made its arrangements for the establishment of a chain of branch offices, located at central market points in every quarter of the United States and Canada, in charge of salaried managers, selected especially for their experience and general fitness. The whole country will be divided in territories, with a branch office in charge of each territory, and these divisions will be limited in extent so that the farthest point will not be over a night's ride on the train from the central branch, and **every market, large and small**, will be in easy and cheap telephone communication. By this plan, the **whole** demand will be covered **every** day, which is **impossible** under any other system.

It will be remembered that the Exchange has marketed over 700 cars during its first season, most of which have been sold f.o.b. shipping point, and **125 different markets** have been employed, many of them having been opened for the first time by the Exchange. This is the widest distribution on record in the Northwest, and the Exchange has **only begun**; many new markets will be opened this season.

As an example of the averages obtained by the Exchange for fruit from a representative district, it submits hereunder the season's averages, f.o.b., for eighty-one cars shipped from Cashmere, Wenatchee Valley:

Three to Five-Tier	Ex. Fancy	Fancy	Choice	Three to Five-Tier	Ex. Fancy	Fancy	Choice
Spitzenbergs .....	\$2.06	\$1.85	\$1.35	Commerce .....	\$1.31	\$1.32	\$ .89
Winter Bananas .....	2.50	2.50	.90	Lauvers .....	1.25	1.25	.80
Winesaps .....	1.67	1.56	1.04	Ingram .....	1.25	....	1.00
Stayman Winesaps .....	1.49	1.46	1.03	Greening .....	1.10	1.10	1.10
Arkansas Blacks .....	1.60	1.56	.95	Wagener .....	1.15	.95	1.01
Rome Beauties .....	1.47	1.35	.96	Stark .....	....	1.25	....
Grimes Golden .....	1.40	1.34	.91	Kane Spitz .....	1.30	1.30	1.00
Black Twig .....	1.33	1.33	1.04	Baldwin .....	1.06	1.02	1.00
Yellow Newtowns .....	1.47	1.49	1.00	Bellflowers .....	1.20	1.20	.90
White Winter Pearmain .....	1.33	1.25	1.00	Bietigheimer .....	....	....	.85
Black Bens .....	1.27	1.22	.84	Black Beauty .....	....	....	.80
Gano .....	1.26	1.23	.83	Chicago .....	....	....	1.10
Missouri Pippins .....	1.26	1.19	.96	Duchess .....	....	....	1.00
Northern Spy .....	1.25	1.11	....	Fameuse .....	....	1.05	.90
Ben Davis .....	1.07	1.04	.93	Geniton .....	1.05	1.05	....
Senator .....	1.19	1.02	.99	Gravenstein .....	1.00	1.00	1.00
Ortley .....	1.45	....	.85	Hoover .....	....	.90	.90
King David .....	1.41	1.10	1.03	Nonesuch .....	1.10	1.01	.80
Willow Twig .....	1.50	....	1.00	Rambo .....	....	1.25	1.00
McIntosh Red .....	1.50	....	....	Red Cheeks .....	....	1.10	....
Ben Hur .....	1.25	1.25	1.00	Seek-No-Further .....	1.38	1.25	1.00

Note—These are "certified" averages. They have been verified by several of the most prominent fruit growers in the Northwest, in nowise connected with the Exchange, whose names will be cheerfully supplied on application.

In addition to the above prices, the Traffic and Claim Department of the Exchange, in charge of a railroad expert, has collected and remitted to the above shippers alone about \$1,200 in claims collected from the railroad companies, thus attesting the practical value of an expert claim department.

Associations desiring to avail themselves of the marketing service of the Exchange should make application at once. The service of the Exchange has been rendered the first season at **less than actual cost**; the continuance of the very low rate depends, in future, upon the volume of the business; in other words, upon the **support** by the growers themselves.

The Exchange is controlled by **fruit growers**, sincere in their efforts to provide a service which will help the whole industry, and men whose interests are as fruit growers first and last, and therefore identical with the interests of every other fruit grower in the Northwest.

Many new associations have become members of the Exchange in the past few weeks, among them some of the best known associations in the Northwest.

## NORTHWESTERN FRUIT EXCHANGE

GENERAL OFFICES: PORTLAND, OREGON

President, REGINALD H. PARSONS (President Hillcrest Orchard Co., 200 acres; Vice President Rogue River Fruit and Produce Association)

Vice President, W. N. IRISH (President Yakima County Horticultural Union)

Treasurer and General Manager, W. F. GWIN (Secretary Kenmar Orchard Company)

Auditor, DEAN H. WHITE

Traffic Manager, J. CURTIS ROBINSON

Cashier, A. A. PRINCE

IF YOU WANT TO  
MARKET YOUR  
**FRUIT**

RIGHT

ALWAYS SHIP TO

**W. B. Glafke Co.**

WHOLESALE FRUITS  
AND PRODUCE

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**  
GENERAL COMMISSION MERCHANTS

128 FRONT STREET

PHONES: MAIN 2348  
A 2348

PORTLAND, OREGON

**Levy & Spiegl**

WHOLESALE  
FRUITS & PRODUCE  
*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS  
Top Prices and Prompt Returns  
PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*

Livingston, Bozeman, Billings  
Montana  
Pocatello, Idaho  
Salt Lake City, Utah

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS  
*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

WHOLESALE  
FRUITS AND  
PRODUCE

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of  
**YAKIMA VALLEY FRUITS  
AND PRODUCE**

**Specialties: Apples, Peaches,  
Pears and Cantaloupes**

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER

**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

**Look Good, Taste Better, Sell Best**

*Grade and Pack Guaranteed*

**Apple Growers' Union**

Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

**WHOLESALE FRUITS**

121-123 FRONT AND  
200 WASHINGTON ST.

PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**



# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we sell apples. We make a specialty of handling APPLES, PEARS AND PRUNES on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK

NEW YORK

LIVERPOOL

LONDON

GLASGOW

## SIMONS, SHUTTLEWORTH & CO.

LIVERPOOL and MANCHESTER

SIMONS, JACOBS & CO.  
GLASGOWJ. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARISGARCIA, JACOBS & CO.  
LONDON

## European Receivers of American Fruits

FOR MARKET INFORMATION ADDRESS:

Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webling  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine

OUR SPECIALTIES ARE APPLES AND PEARS

## Irrigation - Drainage - Conservation - Development

In whatever way you are trying to get the most out of your land, you like to get all the help you can for the least money. There are and will be in every number of the

### NATIONAL LAND AND IRRIGATION JOURNAL

enough helpful suggestions and items of valuable information about what is being done or tried in your own section and in other places to cover the subscription price a dozen times.

The price is only One Dollar a year. Send it today, in any form your please.

### NATIONAL LAND AND IRRIGATION JOURNAL

30 SOUTH MARKET STREET

CHICAGO, ILLINOIS

*If you want to  
know about*

# OREGON

*Subscribe  
for*

## THE CHAMBER OF COMMERCE BULLETIN

*The Largest Commercial Magazine in the West. Devoted to upbuilding Oregon and the Pacific Northwest*  
SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

## THE CHAMBER OF COMMERCE BULLETIN

DAVID N. MOESSOHN, Publisher  
Suite 717 Chamber of Commerce Building, PORTLAND, OREGON

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

# W. DENNIS & SONS

## LIMITED

COVENT GARDEN MARKET  
LONDON

and

CUMBERLAND STREET  
LIVERPOOL

## Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. **Send for prices.**

RAWSON & STANTON, Hood River, Oregon

## Do You Want An Orchard In The Willamette Valley?

In order that we may dispose of our few remaining orchards, we offer a special inducement to purchasers in the way of transportation. This special offer, combined with our low prices, easy terms and a contract with many attractive features, makes this a bargain not to be found anywhere else in the fruit growing districts. They will not last long.

Write for descriptive literature and details of this special offer.

### OREGON APPLE ORCHARDS CO.

*Eastern Office, Bloomington, Illinois*

*Western Office, 432 Chamber of Commerce, Portland, Oregon*

# Spitzenbergs & Newtowns

*From the*

Hood River Valley,  
Oregon

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

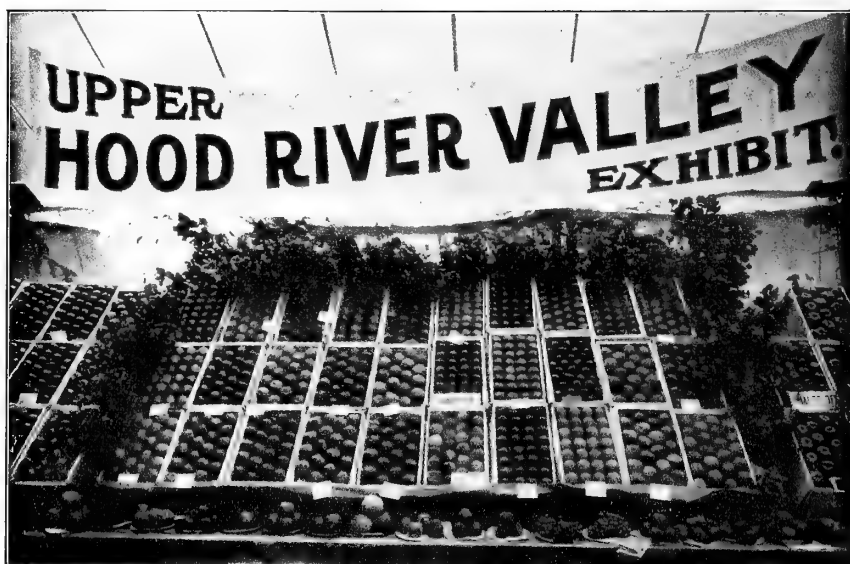
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

## Can You Beat It?

We have got land improved and unimproved that is growing such fruit that can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

**W. J. Baker & Company** Hood River Oregon

The oldest real estate firm in Hood River. Best apple land our specialty

# EVERY SHIPPER

Should aim to retain his identity and build up his business year by year, by shipping exactly what he quotes, and by confining his business relations to reliable dealers.

No shipper can safely rely entirely upon his individual knowledge of his distant customers' "business methods"—it is necessary to know how such customers **have treated other shippers**. The Produce Reporter's Credit Book ("Blue Book") and the Weekly Credit Sheets, and Special Reports keep Members fully posted up to the minute.

Again, no shipper is so well equipped that he can get as good results when shipments are "refused," or complaints made, as he can through the Adjusting Department of the Produce Reporter.

Finally, **Members of this organization do not lose their identity**—do not turn their marketing over to others, perhaps a thousand miles away—but **do their own business**—the doors of opportunity are left open for the expansion and permanent development of their business through their own enterprise and ability.

No matter how reliable the party who wishes to do your business for you (and there are many—though perhaps more who are not), **carefully consider the future—what is there in their "System" FOR YOU?**

Send for pamphlet, **"Four Ways to Market Your Crop."** Tell us, how many cars, what, and when (approximately) you will be ready to ship.

## Produce Reporter Company

34 SO. CLARK STREET  
CHICAGO

Reference:  
First National Bank of Chicago

Telephones  
Randolph 3412  
" 3413

## Gibson Fruit Company

(Not Inc.)

WHOLESALE COMMISSION  
SHIPPERS' MARKETING AGENTS  
FRUIT AND PRODUCE

Codes: Our own Cold Storage Plant on premises  
Capacity 200 Cars  
Modern Economy 131 South Water Street  
Revised Economy CHICAGO  
Revised Citrus

## Selling Apples

### *A Science and an Art*

It would by no means be stretching the truth to declare that an elaborate treatise easily could be written wherein ample proofs could be cited to prove that there is a science as well as an art involved in the successful selling of Western Box Apples, as well as Western Fruits generally.

## Why?

As a science we know it takes years of experience to gain the exact knowledge of varieties, keeping qualities, trade preferences, etc., to say nothing of the "eternal vigilance" regarding market conditions from season to season—aye, from day to day—in order to reach even a fair success in the way of keeping values and prices on speaking terms.

As an art, the business involves every requirement that goes to make "every man an artist in his way." Your apple man to be worth while must amass a variety of essentially technical detail that goes to make the finished salesman, for finished salesmanship is now conceded to call for talent of the highest order. We mean **talent**, not "oxaline."

Yet withal, the matter of selling Western Box Apples and other Western Fruits is a decidedly practical matter. It is largely a proposition to convert the fruits into as much of the "coin of the realm" as possible, and do this with certainty and dispatch.

For the past several years we've handled thousands of cars of these fruits annually, and we take pardonable pride in our record for RESULTS.

Correspondence solicited.

## Gibson Fruit Company

CHICAGO

# 320 Acre Planted Apple Orchard

## FROM ONE TO FOUR YEAR OLD, (STANDARD VARIETIES)

### At \$400 to \$500 Per Acre

Can be bought in five, ten or any size tract. Located in the Upper Hood River Valley. Have small or large tracts of improved and unimproved property in the lower and upper valley. Have also ten acres of bearing orchard for sale, located in center of Hood River Lower Valley.

G. D. WOODWORTH

*For Full Information Address*

HOOD RIVER, OREGON

# ARCADIA IRRIGATED ORCHARDS

THE CENTER OF THE RICH WASHINGTON FRUIT BELT

Arcadia is located twenty-two miles from Spokane, Washington. It's a true fruit district—with every conceivable advantage for making money in the fruit business.

Rich soil, gravity irrigation system, excellent railroad facilities, ideal climate.

**Our Plan**—We plant, cultivate, irrigate and care for your orchard for four years; we pay your taxes for five years. You can remain where you are while we bring your orchard into bearing.

Arcadia is the largest irrigation project in the West. Prices advance soon, so it will pay you to investigate Arcadia now. Ask for literature.

## ARCADIA ORCHARDS COMPANY

HYDE BLOCK

SPOKANE, WASHINGTON

## SLOCOM'S BOOK STORE

Office Supplies  
Stationery

Ledgers, Journals, Time Books  
Memorandum Books  
Rubber Stamps

Souvenir Postals      Picture Frames

## SEATTLE

Increased 194 per cent in population, according to Uncle Sam's last census. This is more than any other large city in the PACIFIC NORTHWEST.

WASHINGTON

Leads all states of the Union in growth, having increased 120.4 per cent, according to the same authority.

If you want accurate information about Seattle and Washington, subscribe for

PACIFIC NORTHWEST COMMERCE

The official publication of the Seattle Chamber of Commerce. Comes monthly, \$1.50 a year.

Address

PACIFIC NORTHWEST COMMERCE

Suite 842 Central Building  
SEATTLE, WASHINGTON

## MCEWEN & KOSKEY

Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

\$1000

PER ACRE NET

\$1000

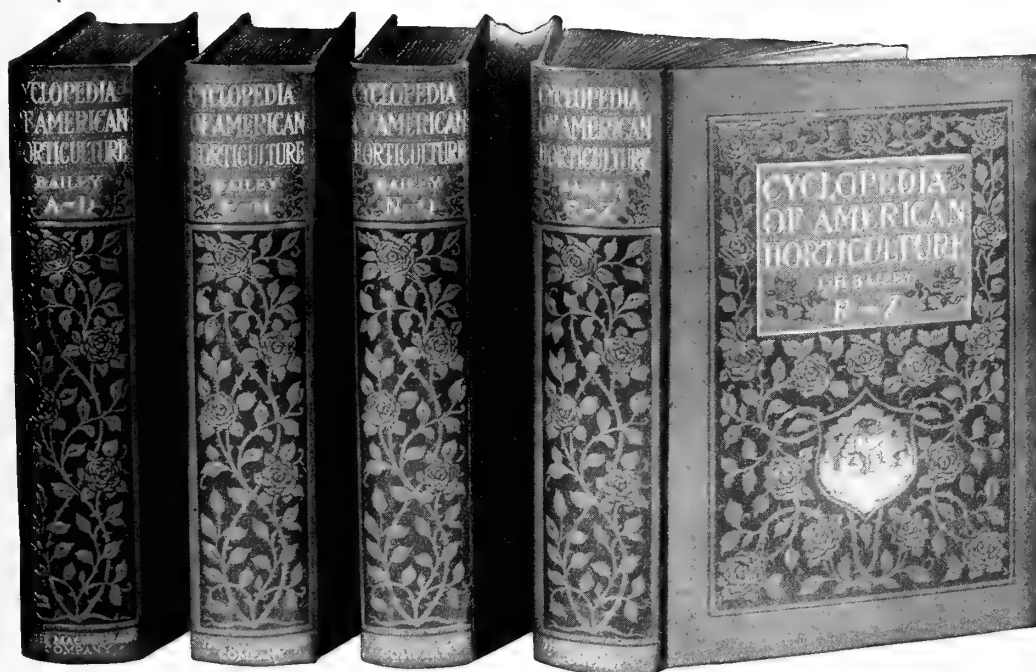


MOSIER APPLES AT HOOD RIVER FAIR

This is not an unusual profit for producing apple orchards in Oregon. It is a perfectly possible profit for any man of persistence and common sense who will select land in a proven apple district in Oregon and develop it properly. If you are at all interested in fruit growing we advise you to investigate the Mosier Valley. This valley adjoins the famous Hood River Valley, and is properly a part of it, so far as the character of the soil and the quality of the fruit produced is concerned. We claim that the apples produced in Mosier Valley are second to none and that there is no section anywhere which offers the fruit grower a greater opportunity. Land in the Mosier Valley can be obtained for very low prices, and can be cleared with comparatively little effort. These lands can be made to increase in value from 100 to 500 per cent in two years by clearing and planting trees. We invite the most careful and critical inspection of Mosier Valley, confident of the outcome. *For full particulars about this Valley address*

SECRETARY MOSIER VALLEY COMMERCIAL CLUB  
MOSIER, OREGON

## A Great Offer for Our Readers on Special Easy Terms



A Text-Book to  
the Student

A Manual to the  
Gardener

A Library to the  
Teacher

A Treasure to  
the Botanist

A Guide to the  
Amateur

A Companion to  
the Country  
Gentleman

## L. H. Bailey's Remarkable Cyclopedia of American Horticulture

The Cyclopaedia of American Horticulture presents the combined labor and experience of the 500 foremost American and Canadian authorities on horticultural subjects, which it has taken years of painstaking editorial work to put into its present convenient and attractive form. These four magnificent volumes place at the disposal of the horticulturist, whether practical, amateur or scientific, an ample and readily accessible account of every subject which at any time may be of interest or practical use in his calling.

### EVERY LOCALITY TREATED

Its range is wide, covering plants, flowers, vegetables, trees, tillage processes, physiological chemistry, tools and implements, cultural discussions, botanical history, biographical sketches, horticultural geography and a myriad items that only constant use will reveal.

### GREAT VALUE TO NURSERYMEN

The set is indispensable to all American libraries, not only because of its position as the foremost work of reference in its field, but by reason also of its great literary excellence and its scientific accuracy, as well as the wealth of cultural data and descriptions it contains. Nor has the scope of the volumes been confined to botanical subjects alone. Such captions as "Diseases of Plants," "Graftage," "Parks," "Perfumery Gardening," "Insects," "Nut Culture," "Railroad Gardening," "Transplanting," "Plant Breeding," "Storage," "Tillage," "Tools," all illustrate the fact that every subject in any way incident to the activities of the horticulturist has been fully covered, commercially as well as scientifically.

### COMMERCIALLY PRACTICAL

It is therefore evident that the appeal of this work is very general. Its subject matter is of almost universal interest, and is treated in such a practical, scholarly and discriminating manner that whoever may be in any way concerned with horticulture, whether as a means of gaining a livelihood, as a mode of recreation, as an outlet for pent-up energy, as a field for scientific investigations, as a method of beautifying his surroundings, as gardener, seedsman, korist, student, teacher, botanist, merchant or country gentleman, will find in "The Cyclopaedia of American Horticulture" a work replete with suggestions, abounding in ideas, and fertile in timely hints, philosophic in design, wide in scope and minute in detail—a counselor, guide and instructor ever within call.

Four large quarto volumes, 2,016 pages, 50 full page plates, 500 contributors, 2,800 original engravings, 4,400 articles, 24,400 plant names.

**Our Offer** Better Fruit has always endeavored to supply its readers with the most authoritative and up-to-date matter on horticultural methods, and has therefore made arrangements with the publishers of the **CYCLOPEDIA OF AMERICAN HORTICULTURE** whereby they may obtain the work on special easy monthly terms. The complete set of four volumes, bound in cloth will be delivered to you for only \$2.00 down and \$2.00 a month for 9 months. Further particulars sent on request.

**SEND  
ONLY \$2**

**BETTER FRUIT PUBLISHING CO., Hood River, Oregon**



# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water **TRANSPORTATION**, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this world famous apple section of the **Cascade Highlands**.

Other places of the Northwest are also profitable for orchards, but in these highlands is the place to live and enthuse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great opportunities for investment.

## Development League

WHITE SALMON, WASHINGTON

## Irrigated Orchard Tracts **Rogue River Valley**



ROGUELANDS IRRIGATED ORCHARD TRACTS

OREGON ORCHARDS ARE THE MOST FAMOUS  
IN THE WORLD

ROGUE RIVER VALLEY IS THE BEST ORCHARD  
DISTRICT IN OREGON

SOLD ON SMALL MONTHLY  
OR ANNUAL PAYMENT PLAN

The Rogue River Valley has made the apple king. It has won the national prizes at the greatest shows ever held in America. It has received the highest prices ever paid for fruit in the New York and London markets. It has been declared by government experts to be the most perfect fruit belt in the world, and has proven beyond the question of a doubt that it will be the most important fruit section in the entire country. The development of orchard tracts is very profitable. You can make \$1,000 per annum on a five-acre tract while your orchard

is coming into bearing. You can clear \$500 per acre when your orchard is developed. We will sell you a five-acre irrigated orchard tract in the very heart of this wonderful orchard country, with splendid railroad facilities, near the prosperous city of Medford, planted to standard varieties of apples or pears, at \$350 per acre; \$350 cash, balance covering a period of four years. Orchards cared for during a period of five years or turned over at once to the purchaser.

Let us tell you all about the glorious country of Southern Oregon and the wonderful orchards that have made this valley famous. Write for our literature. Our references: Bradstreets and R. G. Dun.

## ROGUELANDS, INC.

FRED N. CUMMINGS, MANAGER

MEDFORD, OREGON

# OKANOGAN IRRIGATION AND IMPROVEMENT CO.

*Capital Stock, \$500,000*

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of water shed on mountain streams furnish an abundant supply of water.

Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

## No Better Fruit Land in the State of Washington

A small block of stock for sale at \$100 per share, par value \$100. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

## A NEW INDUSTRY

The Utilization of Wood Waste by Distillation. A general consideration of the new industry, including a full description of the distilling apparatus used and the principle involved, also methods of chemical control and disposal of the products, first edition illustrated by seventy-four engravings, 156 pages. This book is cloth bound. It will be sent to any address, postpaid, on receipt of \$3.20.

A hand book on fermenting, distilling and denaturing alcohol from farm products and wood waste. Trade secrets, no licenses, only a permit, and that is furnished free. Red tape removed, including free tax denaturing alcohol laws. A plain statement of facts for those interested. The latest just out, 280 pages, 60 illustrations, 12mo. cloth. Price \$1.20, postpaid.

Free Tax Industrial Alcohol—Corn stalks and cobs, waste vegetables and wood waste, shavings and old saw dust are now converted into industrial alcohol at ten cents per gallon; sells for fifty cents. Unlimited demand in every village for motors, automobiles, cooking stoves, etc. A five-gallon apparatus makes one gallon per hour; is simple as a corn mill, almost automatic, inexpensive; pays for itself every month. No tax, no licenses; only a permit, and that is free. Orders come in fast. Write today for free farmers' circular No. 9. Address

The Wood Waste Distilleries Company, Inc.  
Wheeling, West Virginia, U. S. A.

## Denatured Alcohol in Solid Form

Cleveland Special Dispatch—September—A well-known Wheeling, West Virginia, chemist has succeeded in producing chunks of denatured alcohol in crystal form, by means of a small infusion of certain acids, very closely resembling physiologically the effects of ethyl alcohol distilled from sawdust. The method employed and the results obtained are somewhat similar to the crystallizing of rock candy or that of saccharine, containing as it does 350 times the sweetening strength of cane sugar, so this alkaloidal crystallized alcohol contains many times the strength of the ordinary denatured fluid alcohol. They will yield 194-proof denatured alcohol, with a greater heating and cooking power for stoves than gasoline, and it is absolutely non-explosive.

A sample can containing 50 solid cubes, a stove and the secret formula showing how simple it can be made at home, will be mailed to you, postpaid, on receipt of \$5.00, or express C. O. D. Address

## The Wood Waste Distilleries Co.

INCORPORATED  
DEPARTMENT H

Wheeling, West Virginia, U. S. A.

# SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

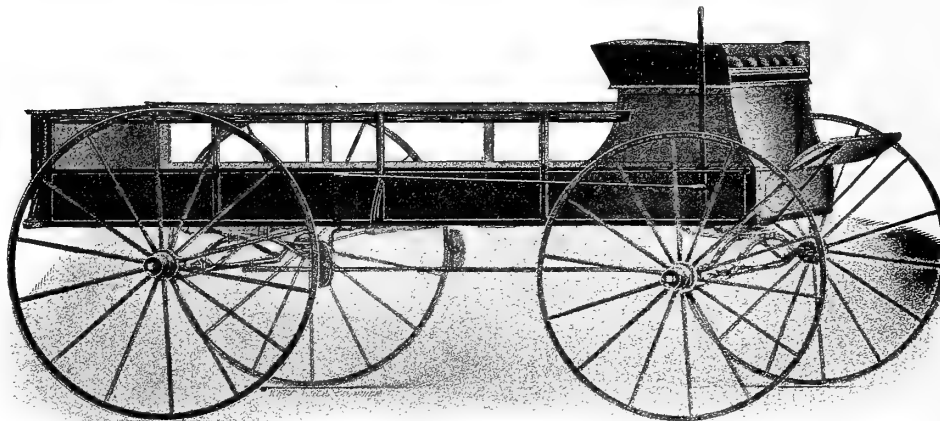
WHOLESALE AND RETAIL DEALERS IN

## Vehicles and Implements

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide.

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

# "OREGON IS THE PLACE FOR ME"

## PORTLAND COMMERCIAL CLUB Portland, Oregon

Send me specific information about what Oregon has to offer

- |  |                                     |
|--|-------------------------------------|
| <input type="radio"/> Apple Orchardng    | <input type="radio"/> Hotels        |
| <input type="radio"/> Pear Orchardng     | <input type="radio"/> Resorts       |
| <input type="radio"/> Peach Orchardng    | <input type="radio"/> Schools       |
| <input type="radio"/> Prune Orchardng    | <input type="radio"/> Railroads     |
| <input type="radio"/> Live Stock Raising | <input type="radio"/> Towns         |
| <input type="radio"/> Poultry Raising    | <input type="radio"/> Mining        |
| <input type="radio"/> Truck Farming      | <input type="radio"/> Manufacturing |
| <input type="radio"/> Walnut Culture     | <input type="radio"/> Water Power   |
| <input type="radio"/> Wheat Growing      | <input type="radio"/> Merchandising |
| <input type="radio"/> Dairying           | <input type="radio"/> Berry Growing |
| <input type="radio"/> Timber             |                                     |

Name .....

Street .....

Town .....

State .....

That's what you'll say when you learn specifically just what opportunities Oregon can offer you in *your own line* of endeavor.

The Portland Commercial Club will lend you all the assistance within its power to make you thoroughly acquainted with the possibilities Oregon offers you in your own line. It will tell you specifically what inducements different sections of the state are offering.

In manufacturing—in dairying—in agriculture—in fruit raising—and all other lines, Oregon offers splendid opportunity for great and successful achievement.

Take out your lead pencil or pen—look down the list of industries, and in the little circle opposite the business that interests you most, make a mark, clip out the list and mail it in. In return you will receive valuable and specific information regarding those sections of Oregon peculiarly adapted to your special line. Write a personal letter. Ask questions that come into your mind. They will all be answered fully and comprehensively. Check the list now while you have it in mind.

**Portland Commercial Club  
Portland, Oregon**

# HOOD RIVER

THE MODERN GARDEN OF HESPERIDES

*“Within the Shadow of Mighty Mount Hood”*

“Where the rain and sunshine meet.” There grow the finest and most delicious apples in all the wide, wide world. Every apple picked by hand and packed in the most scientific manner under the direct and personal inspection of the Board of Directors of the

## HOOD RIVER APPLE GROWERS' UNION

We take pleasure in advising the trade that for the third consecutive time practically the entire crop of this noted valley has been purchased by us, consisting of the noble NEWTOWN PIPPIN, the delicious SPITZENBERG, the magnificent GOLDEN ORTLEY and such other varieties as grow to perfection only in the Hood River Valley.

# Steinhardt & Kelly

NEW YORK

THE MOST EXTENSIVE OPERATORS IN HIGH CLASS FRUITS IN THE WORLD

# Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

# Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

## LUMBER

*Lath, Shingles, Wood, Etc.*

HOOD RIVER, OREGON

# FRUIT

Western  
Soft Pine.  
Light, strong  
and durable.

# BOXES

"Better Fruit"  
subscribers  
demand the  
"Better Box."

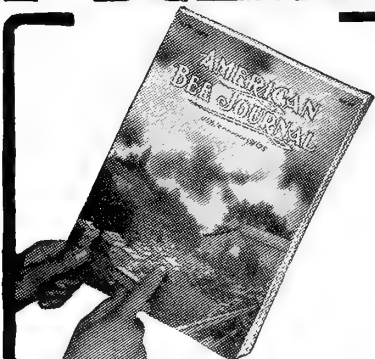
CAN MAKE TWO CARLOADS DAILY

## Washington Mill Co.

Wholesale Manufacturers

Spokane, Washington

# FREE!



## COPY of the Best BEE-PAPER

We want every live bee-keeper to know how much help there is in the "old reliable" American Bee Journal. It is now the brightest, cleanest, newsiest monthly bee-paper published. We want everyone interested in bees and bee-keeping—beginners or experts—to write for a free copy of the

### AMERICAN BEE JOURNAL

Then you will appreciate what a big help it will be to you in keeping bees. Experienced talks by expert bee-men; answers to questions about everything pertaining to bees; special department for women who keep bees; a paper that you'll learn to look for every month.

AMERICAN BEE JOURNAL  
Chicago, Illinois

HEADQUARTERS FOR

## CENTURY SPRAY PUMPS

Hose, Nozzles, First-  
class Plumbing Supplies

## C. F. SUMNER

Successor to Norton &amp; Smith

HOOD RIVER, OREGON

## POULTRY AND FRUIT



One man made over \$18,000 last year—many others make a nice fortune from a few hens and a small piece of ground. But you must know how. American Hen Magazine tells how. It gives the secrets from A to Z in plain language. Subscription price 25 cents a year. Descriptive literature free.

American Hen Magazine Council Bluffs, Iowa

C. M. SHAW

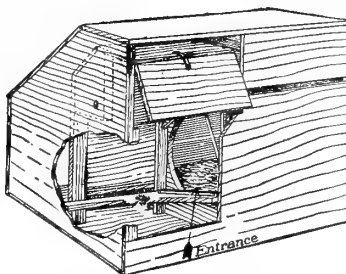
ROY F. DEAN

## Dean & Shaw

Electrical Supplies and Fixtures  
Scientific Electrical Construction

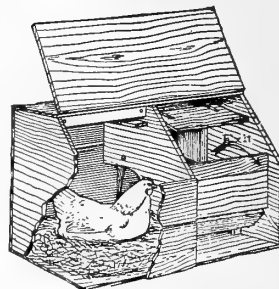
Home Phone 3 Hood River, Oregon

## THE "SUCCESS" TRAP NEST



Automatic-  
ally separ-  
ates the lay-  
ing hens from  
the non-pro-  
ducers.

The only  
trap nest  
which works  
without at-  
tention or  
care from you



Shows "who's who" in your hen yard, and you do not have to watch the hen. *She releases herself.*

## THE NORWICH FEEDER

Scatters  
the grain  
in a wide  
circle.  
Makes  
them  
"Scratch  
for it."



Prevents the  
wasting of a sin-  
gle grain of feed.  
Needs no atten-  
tion except to fill  
when empty. It

is rat, rain  
and bird  
proof; ad-  
justable  
for fast or  
slow feed-  
ing. Will  
save its cost  
in 90 days.

Our 1911 Special Cat-  
alog of "Diamond  
Quality" Poultry Sup-  
plies, with full descrip-  
tion and illustrations of  
everything necessary  
for the profitable pro-  
duction of poultry and  
with practical sugges-  
tions and information  
on the care of poultry,  
their diseases and  
treatment—sent free  
upon request—a refer-  
ence book every poul-  
try man should have.  
Ask for catalog No. 202

## Portland Seed Co.

Portland

Oregon





# KIMBALL CULTIVATOR

*Great Weeds and Ferns Exterminator*

Ninety Per Cent  
Hood River Orchardists  
Use  
This Machine

Send for  
Illustrated Descriptive  
Booklet



Hood River, Oregon, February 26, 1910

Mr. W. A. Johnston,  
The Dalles, Oregon

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard, *Editor "Better Fruit"*

## W.A. JOHNSTON, Manufacturer

Office and Factory, 422 East Third Street, The Dalles, Oregon

Long Distance Phone, Red 991

# Ogburn's Fruit Gathering Vessels

## THE LATEST INVENTION



EXHIBIT NATIONAL APPLE SHOW, SPOKANE, WASHINGTON  
NOVEMBER 14 TO 19, 1910, WHERE IT TOOK  
FIRST PRIZE AND GOLD MEDAL

Saves money by preventing bruising fruit in handling from tree to box. Saves time by leaving both hands free to gather with, and being quick to operate. Money saved is money made.

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. The canvas bottom slides from underneath the paper and delivers the fruit on your packing table without the slightest injury.

This vessel is an oblong metal pail larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit at all.

The vessel holds one-half bushel or half box of apples, and in emptying the second time the canvas bottom eases the fruit in the vessel on that in the box without bruising or scratching, which is practically impossible with the wood or metal bottom pail.

## A Number of these Vessels Given Free

Every reader of "Better Fruit" should write at once and advise number of vessels he can use in 1911. This information is solicited to secure estimate of how many vessels to manufacture, so your orders can be filled promptly. All fruit growers writing not later than April 1, 1911, will receive special order blank with terms upon which a number of these vessels will be given free. Don't fail to write now.

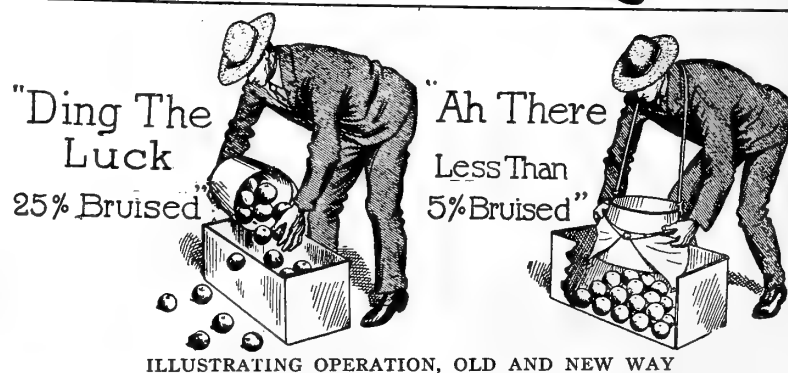
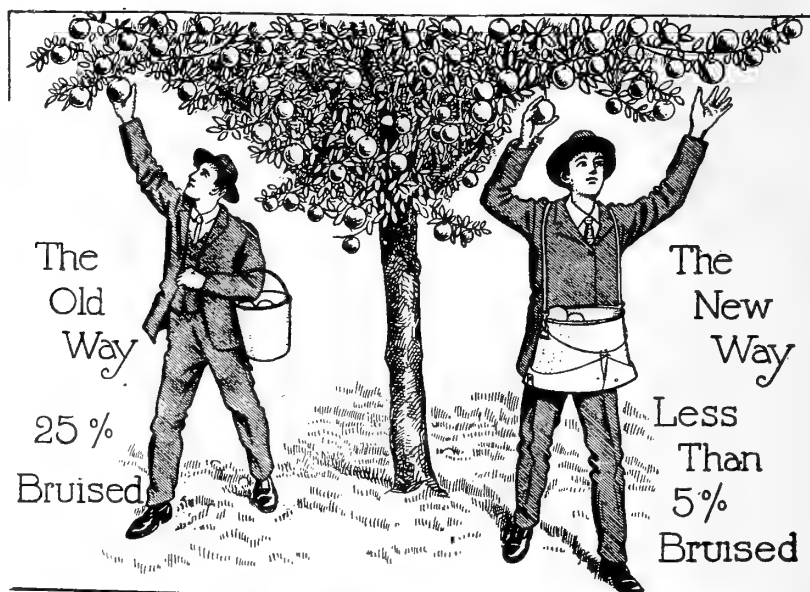
Special terms granted to dealers and agents in their respective trade districts. Secure your territory for 1911 now.

ALL GOODS SHIPPED DIRECT FROM FACTORY

Manufactured by  
WHEELING CORRUGATING CO.  
Wheeling, West Virginia  
For J. H. OGBURN, Patentee

For territory and terms, address all applications to

**J. H. OGBURN**  
WENATCHEE, WASHINGTON





Four Year Old Cherry Trees, Not Irrigated

*We Know* and the only way for *You to Know* is for us or someone else to tell you *that* we grow a greater variety of fruit, and of better quality, at

# The Dalles, Oregon

than any other place in the *Great Northwest*, and bear in mind that none of our fruit is irrigated. This is an indication of its superiority, both as to flavor and keeping quality. If you want to raise fruit, you must, in order to succeed, raise the best—this you can do by locating here. The above cut shows a portion of a beautiful 83-acre tract which we have for sale, all in orchard and highly improved, adjoining corporate limits of The Dalles, a city of 7,000 people and rapidly growing. This place is splendidly situated for subdividing.

*Write Us for Particulars*

R. H. WEBER, THE DALLES, OREGON

# Hood River City Investments

100x100 On Oak Street, with good buildings, rental income \$110 per month, only \$16,000. Liberal terms.

100x200 On Cascade Avenue, consisting of four good lots and frame house. This will double in value within two years. \$7,000. Good terms.

*Combination Orchard and Hay Ranch*—175 acres. 20 acres in orchard from two to fourteen years old, 70 acres in hay produced 100 tons in 1910, balance of land uncleared. Large house and barns, 50 inches irrigating water, all haymaking machinery, near stores and school. \$35,000. Very liberal terms. Big money to be made on this property.

(NOW IS A GOOD TIME TO BUY A HOME)  
(OR BUSINESS PROPERTY IN HOOD RIVER)  
(THERE IS SURE TO BE A BIG ADVANCE IN PRICES)

SEE OUR LIST OF ORCHARDS

**J. H. HEILBRONNER & CO.**

THE RELIABLE DEALERS

HEILBRONNER BUILDING

HOOD RIVER, OREGON

## SOME GOOD BUYS in the Hood River Valley

Highly improved 10 acres  $1\frac{1}{2}$  miles from town, on macadamized road; good 7-room house, good barn; all set to orchard, as follows: 114 7-year-old Newtowns and Spitzenbergs, 144 6-year-old Newtowns and Spitzenbergs, 161 3-year-old Newtowns and Spitzenbergs, 75 2-year-old Newtowns and 118 1-year-olds; 5 acres of berries from 1 to 3 years old between trees; all in the very best of condition. Complete set of farm implements, also wagon, buggy, horse. The price of \$13,500 is below the market; \$6,000 cash, balance on or before 5 years at 7 per cent interest.

20 acres  $6\frac{1}{2}$  miles from town; 3 acres cleared; 7 acres slashed and burned; balance comparatively easy clearing. Price \$4,000; one-third cash, balance in 5 years at 7 per cent.

10 acres highly improved,  $2\frac{1}{2}$  miles from town;  $3\frac{1}{2}$  acres 7-year-old Newtowns and Spitzenbergs, 2 acres 3-year-olds; balance in berries and clover; good house, barn and other outbuildings. An ideal home. Price \$10,000; \$3,000 cash, balance on or before 5 years.

15 acres,  $6\frac{1}{2}$  miles from Hood River; near railway station, school and church; all set to Newtowns and Spitzenbergs, as follows: 5 acres 7-year-old, 3 acres 6,  $1\frac{1}{2}$  acres 4, and  $4\frac{1}{2}$  acres 3-year-old. Trees in A-1 condition; picked 1,120 boxes of apples this year; three acres of strawberries between trees; old house, good barn. This tract is one of the best buys in the Hood River Valley at the price of \$14,000; \$5,000 cash, balance on or before 5 years at 7 per cent.

**DEVLIN & FIREBAUGH**

THE LEADING DEALERS

906-7-8-9 Yeon Building, Portland, Oregon

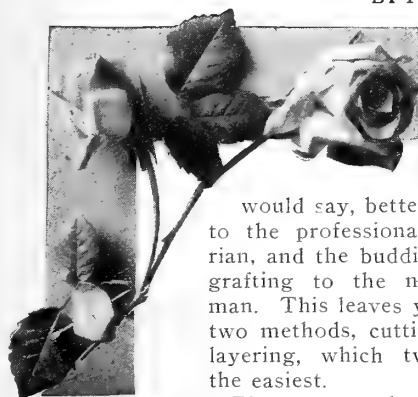
Hotel Oregon Building, Hood River, Oregon

# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## PROPAGATING THE ROSE, WRITTEN FOR AMATEURS

BY PROFESSOR J. A. BALMER, MOUNTAIN ROSARY, CLE ELUM, WASHINGTON



**R**OSES may be propagated in a variety of ways, viz., by seeds, cuttings, layerings, budding and grafting. But as these notes are written for the guidance of amateurs, I would say, better leave the raising from seed to the professional rosarian, and the budding and grafting to the nurseryman. This leaves you the two methods, cutting and layering, which two are the easiest.

First let us take up the method of propagating by cuttings. In all the old works on rose culture instructions something like the following will be found: "In the autumn take well ripened wood six or eight inches long, with a heel if possible, and insert in the ground five or six inches deep; the best soil is a deep sandy loam; protect during the winter; the following autumn the roses will be rooted and ready to transplant." This is the old fashioned way, and while not a bad way to increase your stock of roses, yet it is not modern. There is progress being made even in the matter of rose propagation.

Many times I have had ladies say to me: "I have no luck propagating roses." There is no luck in the matter. Success is bred of an understanding of the matter in hand, so listen! Cuttings of all semi-hard-wooded plants, and this includes the rose, root best and quickest when the plant is most active, or rather I ought to say, root best when the cell-building material is most abundant. This stage is reached in the rose at the time the plants have bloomed and are dropping their petals. This, then, is the time to take the cuttings, right in the height of summer. Especially is this true of such kinds as the teas and hybrid teas, which we now have in such variety, and which are so popular. Let us suppose, then, that you have a dozen plants comprising several varieties and that you desire to increase the stock of each. If you only wish to put in a dozen or two cuttings secure a six-inch or eight-inch flower pot, and after having put a wad of moss to cover the hole in the bottom—this for drainage—fill the pot to the brim with perfectly clean river sand, or bank sand will do if it be free from soil; pack the sand tightly in the pot with a potato masher or piece of scantling, then thoroughly water it; now the

pot is ready for the cuttings. Morning is the best time to do the work; foliage will be crisper in the morning and the cuttings less likely to wilt. There are several ways to make a cutting, but the best way is to secure a cutting with a heel (Figure 1) and two or three eyes. Notice that only a part of the foliage is removed. If you remove all of it you destroy the lungs of the plant. On the other hand, if you leave it all on transpiration will be so rapid that your cutting may suffer.

Some strike a happy medium and cut off half the foliage. Of the five lobes on a rose leaf I usually cut off three, leaving the two at the base (see Figure 1). Cuttings may be made with a sharp knife, or, better still, with a pair of small, sharp pruning shears. Scissors are not good for the work, as they bruise the cells too much. A safe rule is to make a three-eye cutting. Eyes as here referred to are leaf buds in the axles of the leaves—one at the base, which goes under the sand and two above. A longer cutting in tea roses is a waste of wood; a shorter one makes a somewhat weaker plant. If the wood be from a blooming shoot discard all the wood except the three eyes nearest the base. Your cuttings made, you are ready to insert them in the sand, and for this purpose you need a dibble, which is a sharp-pointed stick, or a forty-penny nail will answer just as well. Dibble the cuttings in the sand about two inches deep and about two inches apart. As you proceed press each cutting firmly in the sand with finger and thumb. Your pot or box filled, water thoroughly, label the variety and cover with a celery glass, a bell glass or a large goblet, or in the case of a box cover with a large pane of glass and stand in a north window, kitchen window preferred, for there the cuttings will always be under close observation. Figure 2 is a pot of cuttings filled with rose cuttings and covered with a bell glass. Every morning remove the cover from the cuttings and wash the glass in clean water. This gives the cuttings the necessary fresh air. Every second morning the sand in which the cuttings are ought to be watered with tepid water—not too much—just enough so the water runs out at the bottom a little, and if the cuttings are sprayed overhead it will do no harm. In fifteen to twenty days the cuttings will begin to callous, i. e., a bulbous excrescence will form on the base of the cutting. This stage will be made manifest by an altered appearance in the cutting, the leaves will be more erect, crisper and greener, and the plant will appear to be growing. In about thirty days most varieties will be rooted. However, some kinds require thirty-five to forty

### Contents

PROPAGATING THE ROSE, 19
ROSES AND HOW TO GROW THEM, 21
HISTORY OF PORTLAND ROSE SHOW, 27
IMPROVING THE HOME SURROUNDINGS, 30
LANDSCAPE GARDENING FOR RURAL HOMES, 28
SHRUBS AND WHERE TO PUT THEM, 32
LAYING OUT THE HOME GROUNDS, 38
HARDY NARCISSI FOR OUTDOOR PLANTING, 60
CONCERNING CO-OPERATIVE FRUIT ORGANIZATION, 68
STUDIES FOR STUDENTS IN POLLENATION, 79



PROFESSOR J. A. BALMER  
Of Cle Elum, Washington, formerly professor at Washington State Agricultural College, Pullman, Washington, leading rosarian of the West.



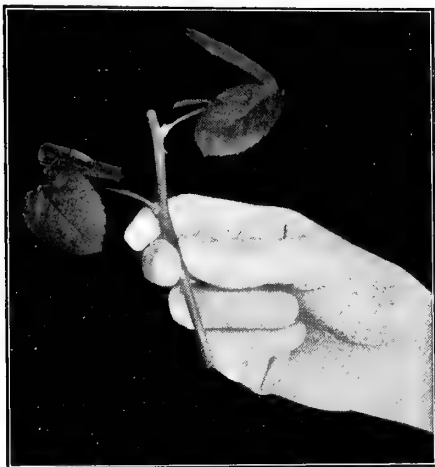


FIGURE 1—AMERICAN BEAUTY

days. When it is known the cuttings have rootlets half an inch or more long (Figure 3) then it is time to pot them off; and this is a job that requires considerable care, lest you destroy most of the roots. The best compost in which to pot these baby plants is good, rich garden soil, but there must be no rank manure or strong fertilizer in it. The soil should be passed through a quarter-inch sieve, or at least made as fine as possible with the hands; two or two and one-half-inch pots are large enough to receive the rooted cuttings, and after all are potted they may be put on a tray of damp sand and put back on the kitchen window sill, inside, or, better still, under a light of glass or in a cold frame on the north of the house, outside. They will require to be carefully, yet thoroughly, watered after potting, and should have no more water for a week, during which time they must be kept from sun and air as much as possible. After a week the little plants will have established themselves in the new soil, and from now on may have more air, water and exposure, until they do not need to be covered at all. Now, please remember, there is nothing arbitrary in these instructions. If you have not got flower pots and bell glasses you may use a box and a pane of glass, and the whole work may be done outdoors, on the north side of a building. Whether you put a half-dozen cuttings in a pot, or a hundred in a box,



FIGURE 2

or a thousand in a hotbed, the principle is the same. The cutting is a suspended plant and will, if given proper environment, reproduce itself. It must be borne in mind never to let the cutting wilt, and during the whole time it is forming callous and roots it must not be exposed to sun or drafts of air, and that the sand must never be dry, yet not waterlogged. Do not stand pots containing cuttings in saucers of water, for this excludes the air and prevents the downward movement of water. If you cannot get small pots in which to grow the rooted cuttings small bean cans, pepper or other small cans will answer; always remembering that you can hardly get the cans too small, and that the bottoms must be punched full of holes to allow of proper drainage. Remember, too, never to expose a tin can in which a plant is growing to the direct rays of the sun, for tin is a great conductor of heat, and all roots on the exposed side will burn and your plant suffer.

All roses may be propagated in this way. Florists prepare large hotbeds

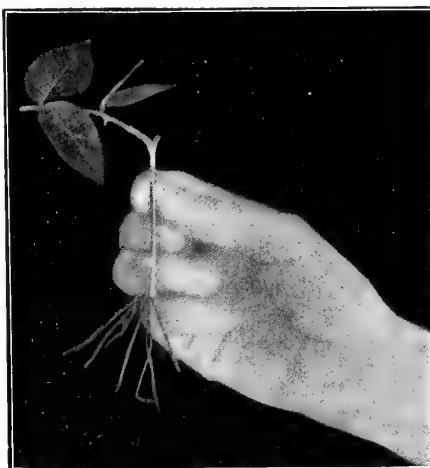


FIGURE 3

within a greenhouse, cover them with sash to preserve the proper condition of moisture and air exclusion, cut rose branches in armfuls, plunge them at once into a tub of water to prevent wilting, and in this way propagate the beautiful roses in tens of thousands. After the young plants are thoroughly established in their pots and inured to the weather, which will require five to six weeks, they may be planted permanently in the garden or put into a larger pot, as you desire.

Figure 4, reading from left to right: The first is an American Beauty cutting, four eyes. The second is a typical hybrid tea, four eyes. The third is a two-eye rooted cutting of Bridesmaid, a tea rose. Notice all the foliage is trimmed partly off. Figure 5 is a typical cutting of a hybrid perpetual of summer blooming variety, and shows a four-eye cutting, trimmed ready for the sand. Figure 6 shows a cutting of a tea rose with the top eye or leaf bud too far started. Discard all wood where the eyes have started, for they will make unsatisfactory plants.

There are certain roses somewhat difficult to propagate by cutting. They do

have subjects of this kind we resort to not seem to root readily, so where we layering to increase our stock. Moss roses, sweet briars and the old Persian yellow are some of those difficult to root. Layering is a simple process. Dig the ground around the plant to be operated on and make it as fine and friable as possible. Select a spot near the extremity of a limb, where its last branches or division is, from the underside of the limb make a slanting cut, severing the limb half to two-thirds through, bend the limb to the ground and peg down the slit portion in the mellow soil, using bailing wire, bent hairpin fashion, and about six inches long; use one of more of these, and if the limb has a tendency to spring back to its old place weight it down with a brick or stone, or something handy. This layering is best done just after blooming time, and the limbs may be left pegged down till fall, when the portion pegged in the ground may be wholly severed from the parent plant and the young plants given new positions in the garden.

Those varieties of roses known as hybrid perpetuals, and which do little branching but make long, straight canes, may all be propagated in the way above described by cutting the canes into sections of three to five eyes, removing part of the foliage and treating exactly as with teas and hybrid teas. These long caned fellows may also be propagated by cutting the canes into sections about six inches long in the autumn and sticking them in well prepared ground in a sheltered place. Do not try this plan if the temperature in your locality goes as low as zero, for you would lose most of them. Roses propagated in this way must be left where they are stuck for a year, after which they may be used in making new beds.

As these instructions are written for the ladies who read "Better Fruit," and solely with a view to the encouragement of a love of the beautiful. I trust you will try and root a few cuttings of the queen of flowers next July. It is more fun than raising chickens.



FIGURE 5—AMERICAN BEAUTY

# ROSES AND HOW TO PREPARE FOR THEIR GROWTH

BY REV. SPENCER S. SULLIGER, D. D., IN THE OREGONIAN

**T**HE one thing usually neglected in rose culture is the proper preparation of the ground. Without doubt a fairly stiff clay soil is the ideal for a starter. If it has natural drainage of gravel or sand about three feet beneath the surface, and the clay soil be suitably enriched, we will have the ideal for general rose growing. True, the tea rose enjoys a lighter soil, and many of the hybrid tea roses do well in a lighter soil. But clay, clay, clay is to be the basis, and then each rose bed enriched and



FIGURE 4—TEA ROSE AND AMERICAN BEAUTY

lightened to suit the hybrid perpetual, the hybrid tea and the tea roses. If natural drainage of gravel or sand is not yours it will pay to dig out the soil for about two and one-half feet deep, fill in six inches of gravel and then replace the soil. Lots of work? Sure! But a great truth about roses was never better stated than in the opening chapter of Dean Hole's work, "A Book About Roses": "He who would have beautiful roses in his garden must have beautiful roses in his heart. He must love them well and always. He must have not only the glowing admiration, the enthusiasm and the passion, but the tenderness, the thoughtfulness, the reverence, the watchfulness of love."

Lacking clay in my rose garden at Bellingham, I excavated to the depth of two feet a bed for some choice roses. Mixing with the clay I had obtained some of the excavated ground I refilled the bed. The result? In a very sharp contest the following year I captured four first and three second prizes at the rose show. And every prize won, except



FIGURE 6—TEA ROSE

one first and one second, came from this specially prepared rose bed. But if you have ordinary garden soil and will properly plant roses where they will have plenty of sunshine and air you will have roses galore.

For instance, for my rose garden in Vancouver I was forced to have the lot graded when the clay soil was quite wet, and this soil was mostly that excavated from the basement of the dwelling. A most unfavorable starter, save the fact that the soil was clay. Neighbors concluded that the roses would either die or come to nothing. But they did not consider that I dug out the ground for about two feet deep and two feet across and put well mixed soil around each rose planted, being sure that each knob where the rose had been grafted on the Manetti root—and I grow only grafted roses—was put about three inches below the surface of the ground, thus limiting, if not preventing, the crop of wild suckers. All this after I had carefully cut off every piece of bruised root and also cut back almost all the healthy roots some, and carefully spread the roots of each rose so that none were crossed or planted too deep. The result was as fine roses as I have ever grown.



ROSE, THE BRIDE (WHITE), BRIDESMAID (PINK), AND RICHMOND (RED)

Grown by J. A. Balmer, Cle Elum, Washington

Here, in a nutshell, you have about all that is needed for the proper planting of roses. Technical and minute instructions are oftener confusing than otherwise. Purchase healthy two-year-old, out-of-doors-grown rose bushes from a reputable dealer, even if the first cost is a little high. Then properly plant them in the ordinary garden soil, and results will be good. True, if you want the ideal then look to the clay and the drainage, with proper enrichment of soil.

The "Queen of Flowers" has many enemies. If the other flowers are jealous of the queen and have hired assassins to destroy her these assassins certainly

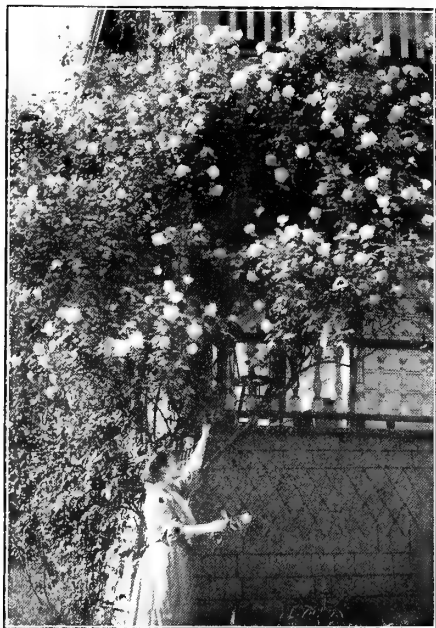


ROSE, BRIDESMAIDS

Grown by J. A. Balmer, Cle Elum, Washington

understand their work. From childhood to old age the queen has a fight. Fortunately, good cultivation will do much to prevent or control the many pests the rose is subject to. I believe that proper planting, cultivation, pruning and spraying as a preventive will keep almost any rose bush in a healthy condition. Preventive spraying, which should be done during the fall, winter and spring, is the secret of healthy rose bushes in the summer. Spraying calendars, giving the day in each month when each kind of spraying liquid is to be used, are almost all of them worthless, or worse than worthless—harmful. The less roses are sprayed, excepting when the bushes are dormant, and the more they are cultivated the better roses you will have. Spray the bushes in the late fall, winter and in the early spring before the leaves start to grow with rose bordeaux mixture, mixing arsenate of lead with the early spring spraying, and if the beds are properly fertilized and cultivated with a hoe during the spring and summer the roses will be better without any spraying after the leaves have appeared in the spring. Cultivation should be as frequent as is needed to provide a good dust mulch, but shallow, so as not to disturb the feeding roots of the rose, which are near the surface of the ground.

The rose bordeaux mixture is the one indispensable for rose culture. The market is full of ready-to-use mixtures and substitutes, but the one safe thing is to make your own mixture. This can be done with but very little trouble if the following directions are followed: Dis-



PICKING CLIMBING ROSES, PORTLAND OREGON

solve one pound of sulphate of copper (blue vitriol) in two gallons of hot water. As the blue vitriol corrodes tin it must be dissolved in an earthen vessel. Let the mixture stand over night, when the copper will be fully dissolved. Then strain through a cloth and keep the strained liquid in a well corked and well glazed jug. Dissolve one pound of fresh, unslaked lime in two gallons of cold water, pouring the water on the lime slowly. Let it stand over night, stir and strain through a cloth and keep in a tightly corked jug. When a spray is to be used take one quart of the copper solution and one quart of the lime solution, shaking the jug before pouring out each liquid. Then add one and one-half gallons of water, thus making two gal-



ROSE ARCH IN YARD OF TOM RICHARDSON PORTLAND, OREGON

lons of spraying solution. Superior cultivation is a great preventive of aphids. Keeping the ground free from weeds and a baked surface will do much to stimulate vigorous growth of rose bushes, and thus destroy the feeding ground for aphids.

Mildew is a formidable enemy. Preventive measures are decidedly the best. Dissolve one-half ounce sulphide of potassium and an ounce of shavings of pure soap in two gallons of hot water, strain and use with an auto spray. Pure soap is used because it will not hurt the foliage, and because it will discourage any activity of aphids as well as cause the sulphide of potassium to stick better. This spray should be used about twice during the growing season; the first time after the leaves are well unfolded in the spring and the second time after the first blooming season. It will do much to prevent mildew and aphids. After mildew appears there is little that can be done. The best plan is to cut off every diseased leaf and branch and burn them. Never under any circumstances allow the cuttings from a rose bush to lie on the ground—and this whether mildew is



CORNER OF ROSE SHOW, ROSE FESTIVAL PORTLAND, OREGON, 1910

present or not. Burn up all cuttings. The application by the use of a good powder bellows of a powder made by mixing one-third soot and two-thirds flour of sulphur to the rose bush is the best remedy after the mildew appears. But the preventive spraying with the potassium and soap solution; the presence of plenty of both sunshine and air, both of which may be aided by proper pruning; the avoidance of sprinkling roses in the evening—which, outside of mulching with reeking, fresh manure, is the most prolific cause of mildew—and the frequent and proper cultivation of the ground, so that no hard, baked crust excludes the air and sunshine from the roots, will be the best that can be done to prevent mildew. Of course, if you grow Killarney, Her Majesty and some other roses that always mildew, no matter where nor how you plant them, nor what you do with them, you will have mildew.

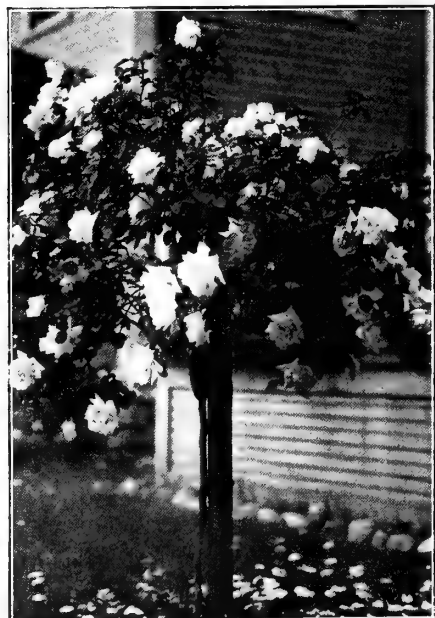
For winter mulching and spring enriching of the ground, unless the ground is a wet soil and not well drained, use cow manure. But don't put six inches of reeking, fresh cow manure on the rose beds for mulching and be surprised if



Photo by Crego

BUD OF "MADAME MELANIE SOUPERT" AT PORTLAND, OREGON

you have poisoned rose bushes and mildew the next spring and summer. The best way to prepare both a mulch and fertilizer is to get a galvanized iron pan made, about five inches deep and as large as you will need, with a few small holes in one corner of the bottom of the pan. Then build a tight board box, with neither top nor bottom, that will fit inside the galvanized iron pan. Put in this box fresh cow manure, cover tightly and shed so that no rain can get into the pan or box. Let the liquor drain through the holes in the corner of the pan and keep in a jar or keg, both to be well closed, to be used for liquid manure in the spring and early summer, or pour it back on the manure in the box. In one year this box of manure will be properly rotted and ready to be put on the rose bed in the early winter, to remain for a winter mulch and to be dug



TREE ROSE IN A PORTLAND, OREGON, GARDEN





ROSE-WREATHED FIRE ENGINE IN PORTLAND, OREGON ROSE FESTIVAL PARADE, 1910

in early in the spring. If you are so situated that you cannot do this then mulch with well rotted manure and dig that in early in the spring, using artificial manure during the spring and early summer.

Fall planting of two-year-old bushes of hybrid perpetual and hybrid tea roses is the best. I have never yet lost a single fall planted rose, and late spring planting has cost me many bushes. But fall planting must be well done. Following the rule for the preparation of the ground and planting let the fall planted rose be so cut back that no staking is needed. On the Pacific Coast the planting should not be done before the last of November or the first of December. In the Middle West and East in October. If planted too early a growth of bush will result and the first freeze will seriously damage the bush. If planted late there will be none, or very little growth of bush, but root growth will go on and make a spring

growth of bush that is ideal. After planting mulch with well rotted manure and keep the mulching during the winter well up around the bush. Losses of fall planted roses come almost wholly from the wind working the mulching and soil away from the rose bush out even to the very ends of the roots. Then a sudden freeze and a dead rose bush. Keep the mulching well up around the base of the bush during the winter, and fall planting will bring roses in June that no spring planting can do. Tea and tender roses had better be planted in the early spring. Hothouse roses, if you plant such things, can be planted any time in spring or summer.

It is impossible to give directions for pruning that will apply to all roses. The rose books that have illustrations of rose bushes, showing the markings where the first and the subsequent prunings shall be, always seem to me to suppose that the grower of roses must carry a book, a yard stick and a piece of chalk to

measure and mark the places where the bush is to be cut. A few general rules belong to pruning: First, prune so that the new growth will make a beautiful bush as well as a beautiful bloom. Second, always cut to an outward-pointed eye. This prevents the crowding of the center of the bush, if you are careful to rub off many of the inside shoots that appear and cut out entirely the canes that come inside. Third, if you want summer and late fall blooms cut back after the first blooming season. Much of this can be done when roses are cut for the house, the hospital and the "shut-ins." Make a liberal stem to each rose you cut, observing the rule of cutting to an out-pointing eye. If this leaves too much stem on the cut rose it can be trimmed after the cutting. Fourth, remember that insects rarely ever deposit their eggs on the lower part of the rose branches. If the final pruning in the spring is a close one, and every cutting is burned, it will mean the destruction of thousands of rose pests. Fifth, late in the fall cut out all weak growth and cut back the canes so that not too much bush is left to be switched around by winter winds, thus working the mulching and soil away from the rose and endangering loss by freezing. In the spring cut out all extra canes and cut back the canes that are left so that an attractive bush will result. Hybrid perpetual roses should, as a rule, be cut back vigorously. Hybrid tea roses not so much and tea roses less yet. But these are only general rules. Many of the new roses are a law unto themselves when it comes to pruning.

Hugh Dickson, J. B. Clark, a magnificent rose if properly pruned, Mrs. Stewart Clark, Dr. O'Donnell Brown and a few other vigorous growers need to have special pruning or you get poor roses. The rule for these roses is to cut out entirely all but from four to six canes, and cut the remaining canes back very moderately. When the new, rank canes shoot up they should be cut off when about three feet high. Side branches will then form and give magnificent



READY FOR ROSE FESTIVAL PARADE, PORTLAND, OREGON



EXTERIOR VIEW OF A PLEASURE RESORT DURING THE ROSE FESTIVAL, PORTLAND, OREGON



HEDGE OF ROSES OUTSIDE OF SIDEWALK IN RESIDENCE  
PART OF PORTLAND, OREGON



WHERE THE ROSE SHOW IS HELD IN PORTLAND, OREGON

roses. If these roses are pruned back like the weaker growers should be the result will be a rampant growth of bush and few and inferior roses. This is true of many of the new and vigorous hybrid tea roses. Indeed, despite all I could do with them, Mrs. Stewart Clark and Dr. O'Donnel Brown have done but little else but make bush this year. They are in for one more year's trial and then, if they do not reform, they go to the incinerator, where I long ago consigned Killarney, Her Majesty and some other mildew breeders.

Lady Ashtown, Betty, Jenny Guillemot, Madame Melanie Soupert, Madame Phillippe Revoire (one of the most beautiful yellow roses in the world), Madame Ravary, General McArthur, Pharisaer (a beautiful rose that is not grown as much as it should be) and others of the same character of growth will do better if five or six, or even more, canes are left and those cut back about one-half the length of cane. Always remembering to cut out all center growth as well as cut the canes that are left to an out-pointing eye. There is no rule of pruning so absolutely imperative as to cut so the center of the bush is kept open for sunshine and air.

Then such roses as Captain Christy, Marchioness of Downshire, Mrs. R. G. Sherman-Crawford, Mildred Grant and

Frau Karl Druschki, with the more or less pronounced characteristic of growth of putting out two or more branches in a cluster, must be pruned to where there seems to be only one out-pointing eye, and then rub off, as soon as they appear, all growth of branches save one at each point.

A few others that shoot out too many branches, but not in clusters like Captain Christy, need pruning back until not so many eyes are left on the cane, and then all in-pointing eyes, as well as about one-half of the other eyes, rubbed off just about as soon as they appear.

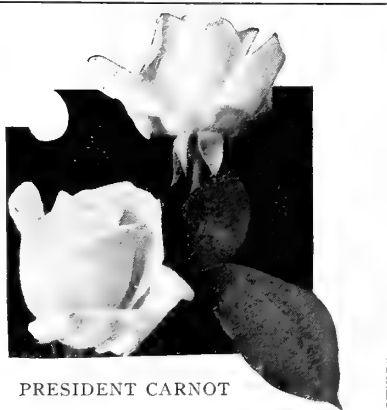
Then such growers as Mrs. David McKee, Miss Kate Moulton, Etoile de France, Elizabeth Barnes, Joseph Hill, Franz Deegan, etc., should be pruned so that the growth of bush will be symmetrical, only observing the rule of keeping the center of the bush from being crowded.

Three commonly grown roses I never grow, i. e., General Jacqueminot, Maman Cochet and Kaiserin Augusta Victoria. A dozen splendid crimson roses that do not get the "blues" when they get a little off are far superior to the scarlet General. Maman Cochet is an ungainly bush and a drooping bloom that is out of proportion to the branch, and in no way is equal to Mrs. Edward Mawley. Kaiserin Augusta Victoria is a good rose, but is excelled by Mrs. David McKee and the newer rose of that class, Molly Sherman-Crawford. Then the newest rose of this class, Mrs. Foley Hobbs, is a fine rose, and far superior to either of the three mentioned. I am sure it will prove to be the leading rose of the above class, of which the Kaiserin Augusta Victoria was the first one on the market. I have not been able to get this new rose, Mrs. Foley Hobbs, but it made a fine showing at the recent London Rose Show.

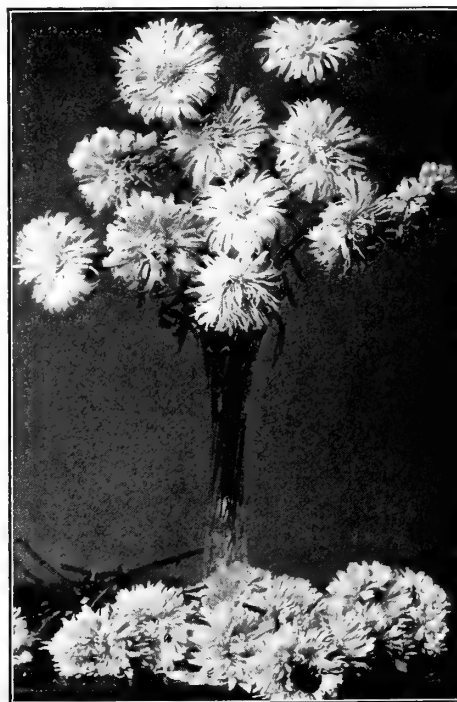
I have been anxious to have Rhea Reid measure up to the expectations of its grower, that gentlemanly rosarian, Mr. E. G. Hill, of Richmond, Indiana. But it will not do it. Mr. Reid has given

to the world three crimson hybrid tea roses of merit—General McArthur, Richmond and Rhea Reid. His favorite, I suspect, is Rhea Reid. But I am sure that General McArthur is decidedly the best general purpose rose of the three. General McArthur is of good color, does not fade quickly, is a continuous bloomer and very fragrant. It is not so vigorous a grower as Rhea Reid.

I add a word about that magnificent rose, J. B. Clark. No rose will be more disappointing unless it be carefully pruned, as stated in this article. No crimson hybrid tea rose will give better returns for intelligent culture. It is difficult to describe the exact manner of pruning this rose, but a little patience and observation will soon demonstrate to each grower the method of pruning that will give the best results.



PRESIDENT CARNOT



VASE OF COMET ASTERS—LAVENDER GEM



## SUGGESTIONS FOR THE CULTIVATION OF ROSES

BY WILLIAM S. SIBSON, SIBSON ROSE NURSERIES, PORTLAND, OREGON

UPON arrival of plants, open the package in some sheltered place, where drying winds cannot penetrate. Sprinkle the roots and tops with water, then cover with a sack or something until planted. Should the ground be too wet for planting dig a shallow trench, lay the plants therein and cover the roots well with soil until the ground and weather are favorable.

Should frost prevent planting do not open the package, but put in a cool house or shed, where there is no fire. Cover with sacks or straw, and await favorable weather.

Delay in transit will occasionally happen, and perhaps from having been so long on the way some of the plants may look shriveled. In such a case dig a trench, lay the plants quite flat therein and cover both roots and tops with soil. Then soak well with water and keep them covered three or four days. It is wonderful how this method will revive the plants, which will usually entirely recover plumpness and good condition.

"Roses love shelter and warmth, and the choice of a situation should, if possible, be regulated by these considerations. At the same time they will endure severe exposure, and no one need hesitate to plant even if the situation be less favorable than could be desired."—William Robinson. Any good garden soil is suitable, that with a good, loamy subsoil being the best. Dig the ground to a depth of at least eighteen inches, well pulverizing the soil and mixing plenty of old, well rotted manure. In case of budded roses, place the union of the stock with the bud about three inches below the surface. Spread the roots out carefully (not allowing manure to come in contact with them); place some fine soil among and over them, tread in firmly, then fill in with the remaining soil.

Old cow manure is the best fertilizer for roses, and after the plants become established they are gross feeders. To obtain

the best results an occasional drenching at the roots with weak liquid manure is essential, especially after the buds are formed, and during their development. In the late autumn, when the ground is dry, apply a surface dressing of manure, which, after remaining through the winter, should be spaded in the following spring.

Strong growing, vigorous kinds should be cut back moderately to six or eight eyes. The weaker and moderate growers must be pruned closer, to three or four eyes. In all cases cut out old, infirm, weak and unripe wood, leaving only the well ripened shoots. Always cut to an eye pointing outward, which tends to keep the plant shapely, and the center open. The above refers to hybrid perpetual, hybrid tea and tea sorts. When planted in the spring prune just before planting.

Climbing roses should not be cut back severely. The tips of the healthy shoots only should be taken out, and the remaining shoots thinned out.

If the weather be dry newly planted roses should be sprinkled overhead daily with water, and well saturated when necessary at the roots. Established plants should be treated to weak liquid manure occasionally, as above.

Aphis are sometimes troublesome, but good cultivation will often prevent their ravages. When they appear cultivate the ground and sprinkle the plants with tobacco dust or insect powder, spraying them afterward with water. The caterpillar or rose grub must be picked off by hand.

One of the best remedies for mildew is flour of sulphur dusted over the affected part as soon as it makes its appearance. A weak solution of bordeaux mixture, sprayed over the plants in winter and early spring after growth begins, will often prevent the ills to which the rose is liable.

Rub off weakly ingrowing shoots as soon as they appear, and pick out with



ROSE, LYON

the point of a pencil or similar instrument the small and undersized flower buds, leaving only the center flower bud on each flowering shoot. This method is pursued when extra fine blooms are required for competition or other purposes.



A man who has had ten years' experience in handling commercial orchards is open for engagement. Had charge of one of the largest bearing orchards in Oregon for five years. References given on request. Address R. M., care "Better Fruit," Hood River, Oregon.



Editor Better Fruit:

Your work is splendid. Please continue to censor your articles, as I depend on them for new and valuable ideas. E. H. Roberts, Peonia, Colorado.



AUTOMOBILE ENTERED FOR THE ROSE FESTIVAL PARADE  
PORTLAND, OREGON



ON THE FRONT LAWN, IN THE RESIDENCE SECTION OF  
PORTLAND, OREGON

## THE ROSE—ITS PLANTING AND THE CARE OF IT

F. V. HOLMAN, IN SUNDAY OREGONIAN

**P**LANTING should be done, if possible, with comparatively dry soil—a very difficult thing to do sometimes. By dry soil I do not mean dust, but I mean soil which breaks all at one time in that beautiful way that a gardener likes, when the spade is put into it and it is turned over. For myself, I get leaf mold from Sauvie's Island, where I go duck shooting. This is as black as gun powder, even when it is dry. A similar mold can be found in the forests or woods around Portland, but if you cannot get that the best thing to do is to get well rotted manure with two parts of rich loam to make the soil in which to plant your rose bushes.

Anyone can make leaf mold by gathering up the leaves from the streets and sidewalks in the fall and putting them in a sugar barrel or other cheap barrel, pressing the leaves down as much as possible, and leaving the barrel uncovered so that the rain will wet the leaves and cause them to rot. Be sure to keep the leaves wet throughout the winter. By the next spring each barrel will be about half full of black pulverized leaf mold ready for use, and this is the best material with which to plant roses that you can get in any way. Hundreds of tons of leaves are carried away by the street cleaning department each year which should be saved and used.

I use my hand in planting roses, for you know that after all the best tool is your right hand—unless you are left-handed. Make the hole at least two feet deep. Fill the hole to near the top—you should not plant your roses too deep—then take the rich earth, not too wet, and press it down with your hand about the bush so that there will be actual contact of the root with the soil.

If you have quite a large hole and a large bush you can step on the soil gently and firm it down—gardeners sometimes use the handle of a spade and pound it down, but with small roses the

hand is the best tool. If you plant when the soil is very wet it will cake, and the tender roots—the white roots—which really give all the sap and substance to the plant, will not penetrate this hard soil. There is another thing to be taken into consideration; the hardy varieties, the hybrid perpetuals and hybrid teas, do better where planted in the fall, and it is better to get low-budded roses for that purpose, which, however, are more or less expensive. These should be planted so that the point of budding will be about three inches below the surface.



TREE ROSE CAROLINE TESTOUT  
August blooming. Portland, Oregon, Heights

This enables the bush to grow roots on the budded variety, so that it has two sets of roots—one set on the stock and the other on the budded variety. Roses thrive better and produce larger flowers when budded on some strong growing stock. I prefer Manetti, as it is hardy in Oregon, and produces a large quantity of sap, and usually does not send up suckers. Some florists prefer the European dog brier, but it is liable to grow suckers, and these must be carefully removed or they will ruin the budded variety.

While you may plant any well matured plants of the hardier varieties in the fall, do not plant teas at that time, for they are very tender and delicate, and we often have a cold snap in December or January which will kill them if they are not well rooted, and you will simply lose your roses.

A great many of the roses you buy from florists here or in the East are very small plants, with little or no earth about the roots. These should be carefully

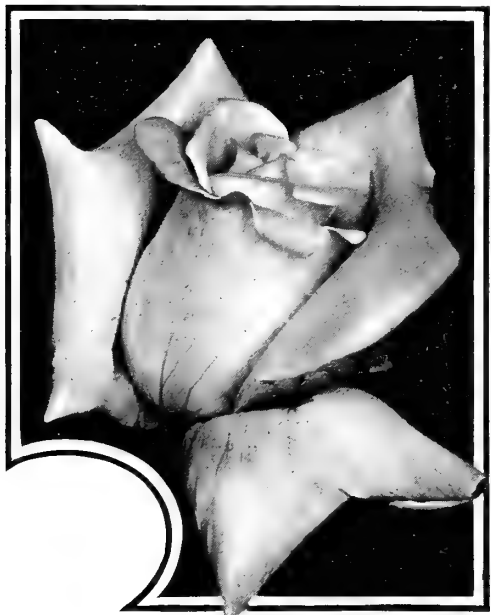


MRS. EDWARD MAWLEY

pruned when planted, and if the roots are more than four or five inches long cut those off also to that length, because the nearer the sap roots are to the plant the better the plant thrives. Also cut off all rosebuds on such plants. I know when you get a new variety you are very anxious to see what it is going to do, but blooming is a tax on the vitality of the plant. When it is young and tender, just out of the hothouse, it needs all the vitality that it has in order to grow strong and vigorous. While early blooming will not kill your plants it enfeebles them, and they are liable never to be hardy and strong, just as feeble children are liable to grow into weak men or women.



ONE of the handsomest trade papers that comes to The News is "Better Fruit," published at Hood River, Oregon. It is a model of typographical beauty and contains articles of interest to fruit growers all over the country.—Chicago Packer News.



DUCHESS OF PORTLAND



INCREASING THE VALUE OF THE HOME  
BY HAVING A BEAUTIFUL ROSE GARDEN  
SURROUNDING IT, PORTLAND, OREGON

# THE PORTLAND ROSE SHOW TWELVE YEARS OLD

BY WILLIAM S. SIBSON, PORTLAND, OREGON

IT was in the year 1876 that first I began to take notice of and to develop a keen interest in roses in Portland. We had that year been married, and Mrs. Sibson joined with several friends and neighbors in a club to send East for several collections of roses. They were miserable little hothouse-grown plants that we received, and most of them could not survive the shock of outside planting, and soon perished and died. Still I am sure this adventure first aroused an unexpected interest in roses within me, which must heretofore have lain dormant, but which thereafter grew and developed until my rose garden became a hobby, which occupied a great deal of thought and most of my spare time. Finally, thirty years later, it landed me in the rose business as a life occupation.

At the time I speak of, and later, I secured and studied any literature on the subject that I heard of. In 1883 a friend presented me with "A Book About Roses," by S. Reynolds Hole. This book is a classic—an idyll. In my opinion no book about roses has ever approached the beauty and usefulness of this. Its study added fuel to the fire, and led to the ambition and desire to develop the very best there was to be gotten out of roses through intensive cultivation and continuous care. There were also other lovers of roses in Portland at that time, and much pleasure was obtained from mutual visits to each other's rose gardens, and I am sure the kindly interest, admiration or criticism resulting were to each an incentive to endeavor to attain perfection.

Among these early fanciers were some who still love and cultivate their roses, while others have already passed on to the Elysian gardens. A few names of successful cultivators may be of interest to older residents, and among others the following now occur to me: Professor Bolander, a true and learned lover of all that was beautiful in nature; Mrs. B. Killin, F. V. Holman, Andrew Saling, George Forsythe, Mrs. H. Everding, Mr. Bartell, all of whom have directly or indirectly had a part in the development of the rose in Portland.

While considerable interest was thus displayed in rose culture it was not until the year 1899 that the first real rose show was held. The day was May 21, and the place was the drill hall of the Bishop Scott Academy. This show was given under the auspices of the ladies of Trinity Church, assisted by other ladies of the city, and the affair was a most unqualified success. While the number of exhibits was small compared with more recent shows the splendid size and quality of the flowers displayed had without a question much to do with awakening a general interest in rose culture in Portland. The second rose show was held June 10, 1890. In my scrap book I find a clipping from The Oregonian concerning it, which I quote:

"Prizes were awarded for the best collection of twelve roses, the best collection of six and the best general collection. The second prize was taken by Mrs. W. S. Ladd, and the third by Mrs. H. J. Corbett. A noticeable thing was that the flowers were arranged in exactly the same manner as they are shown in the Royal Horticultural Exhibit at the Crystal Palace in London."

The next rose show was held on June 13, 1891. No show was held in 1892, but on June 21 to 24, 1893, the most ambitious affair so far attempted, was held at the old Exposition Building on Washington Street, under the auspices and patronage of the Oregon State Horticultural Society. Prizes were generously donated by the society to the value of \$500. The Oregonian contained a full report of the affair, and a condensed account was printed in a valuable and popular paper then published in Chicago, entitled, "Gardening." It was edited by William Falconer, who for years was superintendent of the famous Dosoris Gardens, belonging to Mr. Dana, on Long Island, New York. With the following statement was also printed a photograph of one of the prize-winning exhibits at the show; thus were Portland roses already becoming famous:

"The first annual flower show of the Oregon State Horticultural Society was held at the Exposition Building in this city June 21 to 24. The spacious hall was beautifully decorated, and the numerous exhibits and designs of native flora, tuberous and other begonias, sweet peas, pelargoniums, pansies, roses, etc., were enthusiastically admired by some six thousand people. The society offered prizes amounting to \$500. The first day was specially designated for the rose show. Exhibits were made in regulation boxes (three feet nine inches by one foot six inches top measurement), with zinc tubes, moss, etc., and prizes were offered to amateurs for the best twelve, the best six and the best general collection, and to professionals for the best general exhibit. This climate is pre-eminently adapted for the culture of roses, and the fine display of the choicest exhibition varieties of hybrid remontants in their perfection of color, size and fragrance was a revelation to all, and especially to Eastern visitors."

This was the first and last rose show officially patronized by the Oregon State Horticultural Society. I am sure, however, that it was not for lack of interest, but more probably for lack of means, for the then president of the society, Dr. J. R. Cardwell, was ever a true admirer of the rose, and always willing and anxious to assist in its development and improvement.

Incidentally I repeat that the above show was held on June 21 to 24, 1893. To illustrate the uncertainty and irregularity of the rose blooming season in Portland, I will mention a note I find in my garden book, saying: "The show would have been better five or six days

later," and another remark, "No roses on Decoration Day this year." The latter remark occurs again in 1896. Such conditions would have been very awkward, to say the least, had the date of our rose show been fixed ahead for early June, as it sometimes is these present days.

During the next few years several good rose shows were held, and, as I recollect, always with increasing patronage and success, financially and otherwise. Since the year 1890 the population of the City of Portland has been multiplied by five. Within the same period the number of roses grown in and about the city has increased by millions. How much wealth this development and love of roses has indirectly added to the intrinsic value of her property—how many people it has added to her population, and how much has it tended to the enormous advancements the city has made since the days we speak of—who shall say!

In 1905 came the Lewis and Clark Exposition, and the Rose Show in the Auditorium Building on June 3 of that year will be ever memorable to those who had the good fortune to attend it. The following clipping from the Oregonian of that day will be of interest to many:

"The committee on Rose Day of the Portland Rose Society takes this means of tendering thanks to all those who so ably assisted in making the display an unqualified success.

"It especially desires to thank the press of this city for its generous advertising and free notices of the event; to Theodore Hardee, H. E. Dosch, Oskar Huber and other officials of the exposition for their unvarying courtesy and assistance; to the judges who so ably performed their arduous duties, and to George Otten, under whose direction the Auditorium was transformed into a bower of beauty. The committee also wishes to thank the members of the Rose Society for their untiring assistance in collecting and arranging such masses of roses, and particularly to the multitude of friends who so generously donated their choicest specimens and other flowers. The committee fully appreciated the assistance given by Messrs. Martin & Forbes and Clarke Bros. for the costly and beautiful displays made by them. Finally, thanks are tendered to L. Allen Lewis and W. P. Olds for their kind contribution of the necessary jars for the Rose Show. The committee is composed of William S. Sibson, Mrs. George H. Lamberson, Frederick V. Holman, Mrs. B. Killin and Thomas G. Green."

Since the great event above referred to the Rose Shows of the Portland Rose Society have been made a part of the magnificent entertainment provided annually by the Portland Rose Festival Association. To say these shows have been successful would be scant praise. They have, in reality, been the great

feature of the Rose Festival. At the last show held in June, 1910, three million rose blooms were used in the decorations of the Armory. Roses entered for competition were magnificent in quality, and could not be surpassed for size, beauty and perfection at any rose show in the known world. More than three hundred competitive entries were made. Besides this, the city divided into twelve competitive districts, poured in its thousands of roses from north, east, south and

west. Sixty-four prizes and trophies were awarded, and 75,000 people visited the show.

Everything was conducted on a broad, grand and liberal scale, and, I suppose, never was seen a more charming and enchanting sight than that which greeted visitors to that great rose exhibition last June. It certainly was a scene worthy of Portland, and one that to every mind confirmed and sealed the fact that she is of very truth "Portland, the Rose City."

## LANDSCAPE GARDENING AND THE RURAL HOME

BY PROFESSOR ARTHUR L. PECK, OF J. B. PILKINGTON NURSERY, PORTLAND, OREGON

**T**HOROUGHLY to understand and properly to appreciate landscape gardening one must be familiar with a few of the basic principles of the art, and also know what we mean by the term "landscape gardening" in the first place. It has been defined by a well known writer as the arranging surfaces of land and water, with the forms of vegetation they support, and all such forms of architecture and sculpture that may be thought desirable according to some settled scheme or idea. Landscape gardening is a fine art, and is properly placed with painting, sculpture and architecture. That is a fine art which attempts to create organized beauty, to unite several dissimilar parts into one organized whole.

Granting, then, that any landscape composition may be criticised with reference to rules applicable to the other arts, we would expect to find certain similar artistic qualities in all branches. One of the most important of these qualities is "unity." Unity in a landscape composition means that some one idea shall prevail throughout, and that all details shall be subordinate to it. To attain this unity one must subject all his ideas to one of the two general styles of treatment—known as the "formal" and the "natural." The former is characterized by the presence of the straight lines, geometrical forms, architectural features, plane surfaces and sheared or regular forms of trees and shrubs. It is some-

times called the "geometrical" or "architectural" style. In the "natural" style



Photo by C. C. Hutchins  
EIGHTEEN-MONTHS-OLD PINK RAMBLER  
Town home of C. C. Hutchins, White Salmon  
Washington

we find irregular curved lines, broad, sweeping curves in the surfaces; irregular grouping of trees and shrubs, irregular skylines and the absence of all things which pertain to the architectural. Country homes, surrounded as they are by nature's generous treatment, should be laid out along natural lines. City squares, street parkings, plazas and other limited areas closely associated with large buildings should be treated along formal lines.

With these general principles in mind let us take up the problem of properly arranging the home grounds so that when the work is complete the grounds and the house, taken together, will present to the observer a harmonious, pleasing picture.

The first of all to be considered is the convenient arrangement. The most beautiful home or garden is not good if the convenience of the owner is sacrificed. Drives and walks should be laid out so that they will be useful. They should be direct and have good grades, and if curved that the deviation from the straight line should be justified. This can be done by taking advantage of the natural contours of the ground, or by

planning in such a way that it comes very natural to make a detour around the obstacle. Straight lines are many times justified, and unless distance and other conditions warrant it, should be used.

The foundations of the entire work is the lawn. It should be broad, well graded and well kept in some instances, and should be framed on either side by interesting grouping of foliage. Generally speaking the lawn planting should be carried to the side, or at least related to the border planting, if specimen trees are used. In many farm homes a broad mowing, or meadow, in front of the house is very attractive. In that case the grass should be cropped only in close proximity to the house. The effect of this grouping of foliage on the sides is to frame the home picture and to set off the house to the best possible advantage.

In arranging planting it is worth while for one to study the works of nature. Note the following outline of young fir growths as they creep into the clearings. You will find that line is irregular, deep bays showing here and there, separated by strong, massive projections. Oftentimes there will be an individual or two standing out from these strong masses. The straight line is entirely absent, while the outline of the foliage presents long, graceful curves. In choosing the materials to be used locate the coarser texture of the foliage further from the house, and as you approach the home the shrubs and trees should be finer, and be able to bear a closer inspection. Fine flowering shrubs and vines should be used close to the home, and these serve in a way to tie, or to unite, the building with the grounds. Care should be taken, however, not to plant too heavily around the foundation or the appearance of soundness and stability will be lost, because one can get no idea of the foundation on which the structure rests.

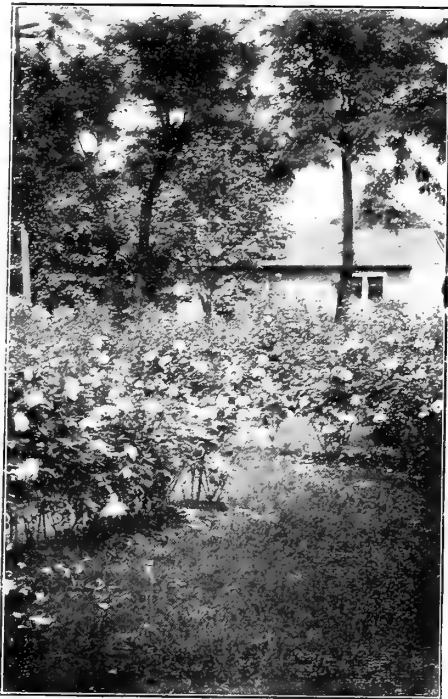


A BEAUTIFUL RESIDENCE CORNER  
PORTLAND, OREGON



A BASKET OF PANSIES  
Portland, Oregon, grown

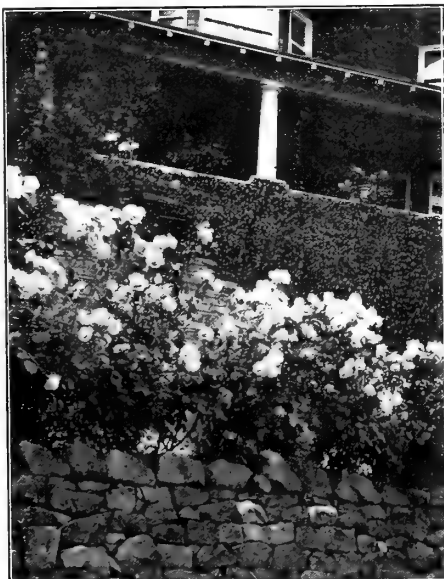




A MAGNIFICENT SIGHT DURING THE SUMMER IN PORTLAND, OREGON

It is the desire of most men to have their grounds appear as broad and extensive as conditions will allow. Whenever we introduce into the lawn such things as circular flower beds, rose hedges and other forms of brilliant flowering plants we decrease the apparent extent of the area. Locate all herbaceous flowering plants and roses by themselves along the shrubbery border, or possibly near the entrance of the vegetable garden. Here they can be well cared for, cut and taken into the house, or allowed to mature and die down without seriously affecting the appearance of the complete picture.

The use of materials is a complicated subject in itself, and time forbids my taking it up in this article. I would like to say, however, a few words in favor of our native plants. The flora of Oregon



ALONG THE FRONT PORCH OF A RESIDENCE PORTLAND, OREGON

is very rich in shrubs and trees of ornamental value. Among these I might mention Oregon grape, red flowering currant, mock orange, red-twigged dogwood, waxberry, mountain spray, nine bark, sweet briar rose, azalea, mountain lilac, rhododendron, madrone, chinquapin, flowering dogwood, hemlock, cascara, numerous conifers and many others. These plants all do well in cultivation and make beautiful specimens, especially when planted quite small.

So much for what can be done in beautifying the home grounds. It is very easy, however, for a lover of plants to seriously overdo the matter. Do not feel that you must have everything you see to which you take a fancy, and in general it is a good thing to avoid what we call "horticultural freaks." We do not want to make a museum of our home grounds.

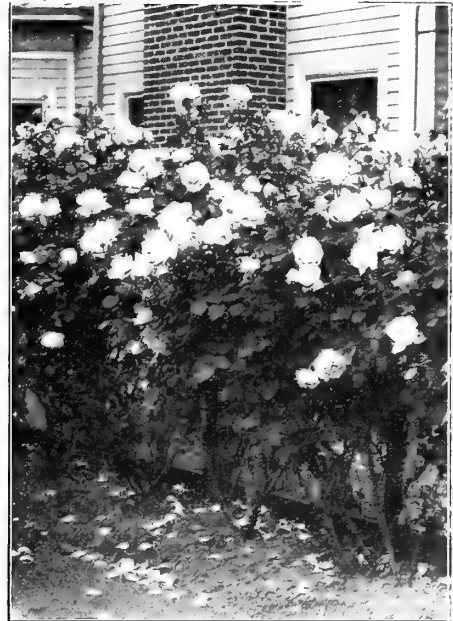
Things brought into close association should be congruous and kindred in character. Rockeries and rustic work too near the home are hardly logical, one suggesting the wild and the picturesque, the other art and the works of man. The well known tripod and kettle filled with



IN A ROSE GARDEN AT PORTLAND, OREGON

flowers is another example of the incongruous. Sea shells for edging flower beds far removed from the ocean, decaying fir stumps in the midst of a well cared for lawn; iron dogs or stags amidst similar surroundings are other irregularities which one so often sees, and which are much better left out of the composition.

Much has been said with a view to urging amateur landscape gardeners to pay more attention to the arrangement of the trees and shrubs on the home ground; to bring them to the point where they will realize that small compositions require just as much study as large ones, and to encourage those who feel that financial conditions bar them from devel-



HEDGE OF ROSES IN PORTLAND, OREGON

oping attractive home grounds. In bringing these remarks to a close I wish to quote Mrs. Van Rensselaer, one of our most artistic writers on the subject of landscape gardening, presenting for your consideration her idea of the application of the subject under discussion. She says:

"If now we ask when and where we need the fine art of landscape gardening, must not the answer be: Whenever and wherever we touch the surface of the ground and the plants it bears with the wish to produce an organized result that shall please the eye? The name we usually apply to it must not mislead us into thinking that this art is needed only for the creation of broad landscape effects. It is needed wherever we do more than grow plants for the money we may save or gain by them. It does not matter whether we have in mind a great park or a small city square, a large estate or a modest dooryard, we must go about our work in an artistic spirit if we want a good result. Two trees and six shrubs, a scrap of lawn and a dozen flowering plants may form either a beautiful little picture or a hundred disarray of forms and colors."

#### Editor Better Fruit:

In the March number of "Better Fruit" appear two articles giving analyses of some Sherwin-Williams arsenate of lead showing approximately 6 per cent arsenic. In each case the arsenate of lead referred to was manufactured early in 1908 in order to try out the value of a strictly basic arsenate of lead. It carries an exceptionally high proportion of lead oxide and was too expensive to market regularly and was uncertain as to its toxic action. The Sherwin-Williams Company never made such a product for sale, but only put it out for experimental work. We regret that your paper is still publishing analyses of material turned out three years ago for experimental purposes, which does not now and never did represent the output of this company's product. We would appreciate your publishing the statement in your valued paper that the Sherwin-Williams Company guarantees its arsenate of lead to contain a minimum of 12½ per cent arsenic oxide. Thanking you for publishing this letter, if you can consistently do so, we remain, yours truly, The Sherwin-Williams Company, Cleveland, Ohio.

#### Editor Better Fruit:

Enclosed find one dollar. Don't stop sending "Better Fruit." It is the best ever, and is doing a world of good. I am yours truly, J. E. Dow, Deer Island, Oregon.



# IMPROVING THE SURROUNDINGS OF YOUR HOME

BY PROFESSOR H. F. MAJOR, INSTRUCTOR IN LANDSCAPE GARDENING, UNIVERSITY OF MISSOURI

**T**HAT the average true American delights in clean surroundings and plenty of fresh air is a most pleasing fact. Most of the slothfulness and slovenliness in our country seems to be associated with new inhabitants unused to our customs and ideals.

Our country is large, our institutions are large, our mountains, our streams, our lakes and our fields are the largest in the world, and it is this "bigness" that characterizes the American people with an individuality so different from all other nationalities. Let us, then, nourish and protect this individuality by establishing big and high ideals, and always working toward a bigger and better end. Let us always seek to improve our social and economic conditions.

God has given us a big sky, a big land and a big field to work in and we should maintain it as befits our highest ideals.

It is not necessary that a man should spend a million, a thousand or even a hundred dollars in improving his place if he cannot afford it, but he should be willing and try to make the very most of what he has to do with, and in this way he will be doing the biggest thing that he can do.

Perhaps the first question that arises is, "How large a piece of ground must I have for my yard?" And I say anywhere from a spot forty feet square up to twenty-five acres or more, but never more than you can afford to maintain after you have once developed it.

Some of you are holders of small city properties, but in the main I direct my remarks to the average farmer who can afford to have from one-half to three or four acres of ground about his house. Now, this area is not to be occupied by



WISTERIA

barns, chicken houses and stable yards, but is the ground given over to the lawns, flower gardens and the out-of-door living room that every farmer and every farmer's wife delights in.

I take it for granted you have all made a choice of the land set apart for this purpose and that the house is already located in the lot.

However, let me state an important fact to be considered in the location of the house and something about the style of that house: First, the best exposure is the south and east, and if possible the better rooms—i. e., the living rooms—should face in this direction. Second, these rooms—i. e., the parlor, living room and dining room—should look out upon a wide, open lawn. Third, if your house has a lot of gables, ginger bread fret work under the eaves and around the porch railings and pillars remove them and replace with straight line simple trimmings. Remember that the highest type of refinement and beauty is only possible through simplicity. Fourth, build a good, big, wide sunny porch on the lawn side of the house and another at the kitchen door; cover these porches with roses and Japanese clematis and see what a wonderful improvement is then accomplished.

The improvement of the grounds about the house is not always in putting in a shrub here or a tree there, but more often it consists in cleaning up and knowing what to take out. Too much planting in the yard, sprawling, low-hanging limbs of shade trees and overgrown hedge rows often shut out a beautiful view of a distant green pasture, a gentle stream or a lofty mountain peak.

It is this ability to see from a place and to look toward a place from a dis-

tance that is the secret of a beautiful homestead.

It is an old and true saying that "distance lends enchantment." At the basis of all high class development of out-of-door scenery is, first, simplicity and then extent.

Look out upon your field, your pasture, your distant hills and streams and learn the value of that greatest wealth—the summer sunset—which is all yours.

When you are clearing pastures, woodlands or fields leave scattered here and there an occasional clump of good shade trees to protect the cattle from the heat of summer suns and shelter them in winter from the bleak north winds. Where there is a choice cut out the soft wood trees and leave the nut trees and the good timber. This latter increases very rapidly in value as years go by.

If there are no shade trees near the grounds some should be planted in rows along the road or along the boundary of the yard. Do not plant them in rows in the yard, for this is an orchard style of planting, and one that suggests the economic and the commercial rather than the beautiful. Here trees should be planted in groups of three, five or seven, or occasionally singly where it is desirable to shade a particular spot.

As a general rule shrubs should be planted in clumps or masses along the border of the home grounds and in the rear against the outbuildings. They



COMMON SNOWBALL

Residence of W. Merriman, 304 East Sixteenth Street



CLEMATIS JACKMANII

Residence of W. Merriman, 304 East Sixteenth Street North, Portland, Oregon



BRIDE AND BRIDESMAID  
MARIE VON HOUTTE  
PAPA GONTIER

may also be placed with considerable effect, and they should be so planted, against the foundation of the house and in the corners of the drives and walks. Keep the walks and road on one—the least desirable—side of the lawn. Do not have the yard cut up in small checker-board plats by walks going everywhere, and do not have a walk run all the way around the house, where it always has to be looked at.

Better put your flower bed near the border and not in the middle of the

lawn, where it reminds one of a button sewed on the knee of your trousers—out of place and no reason for it being there. Put it near the shrubbery, where it serves only to add to the decorative value of the frame which surrounds the lawn picture.

Too often grading about a place is overlooked entirely. Grade down the terraces, fill the sink holes and give a gentle, undulating, rolling surface to the lawn that it may more naturally reflect the lights and shadows of the clouds which fly above it.

The native elm, the sugar maple, the walnut, the linden and the oak are our best shade and street trees, while in choosing our shrubbery we should cling to the good, substantial species which have stood by us a hundred years rather than to the horticultural specimens, most of which are freaks and contortions of plant growth, and which attract our attention only through their outlandishness and the high prices attached to them. Why should anyone for a moment desire that upside-down flowerless specimen called Teas' weeping mulberry, which is peddled from door to door by the "tree quack," when for half the price he can enjoy the glory and fragrance of a mock orange or that most splendid of all shrubs, Van Houtte's spiraea, sometimes called bridal wreath.

Don't get discouraged by trying to do everything at once. Would you have your boy become a man in a day? The love you bear him is due to the fact that he has grown up with you, and you have cared for him, and could only see him improve hour by hour and year by year.

So it should be with your yard. Make a plan and carry it out from time to time. Always look forward to your highest ideal. Buy some of the garden magazines. Look at the pictures of comfortable farm homes which have been cared for. See where your own needs changing.

Get in the habit of sending for nursery catalogues and seed catalogues, whether you intend to buy or not.

Do you realize what wonderful flowering effects you can get from five cents' worth of annual flower seeds?

Astors, poppies, phlox drummondii and corn flowers will bloom for you as well as for the millionaire, and probably better. Do not fail to plant some perennials. These plants die down to the ground every winter but come forth with added strength each succeeding year. You will be surprised how fast they multiply, what little care they need and what a wonderful wealth of bloom they will produce. Some of the best to begin with are peonies, phlox, delphinium, lilies and hollyhocks.

Cover the old fence and the wood-house with Virginia creeper and clematis, or with Hall's honeysuckle, and then as you come in from the farm fields the day will look less long and the evening shadows will harbor sweet memories of childhood days, when our grandmothers sat in their rose gardens and planned the hours that made "Home, Sweet Home."



KILLARNEY  
MY MARYLAND  
J. B. CLARK

**OREGON FRUIT MEN ELECT.**—The Rogue River Fruit and Produce Association has elected the following officers and directors to serve for the ensuing year: Colonel R. C. Washburn, Table Rock, president; F. E. Merrick, Medford; C. E. Whisler, Medford; G. A. Hover, Phoenix; R. H. Parsons, Medford; H. E. Gale, Merlin; A. C. Allen, Medford; A. C. Randall, Talent; L. K. Haak, Eagle Point; K. S. Miller, Medford, secretary; C. H. Gillett, Ashland; L. I. Wood, Grants Pass; P. J. O'Gara, Medford; J. W. Merritt, Central Point; C. C. Scott, Phoenix.

Editor Better Fruit:

"Better Fruit" is the best and cheapest fruit magazine in existence. Every fruit grower everywhere should have it. George Heatherbell, Victoria, British Columbia.

# SHRUBS AND WHERE AND HOW TO PLANT THEM

BY W. H. WICKS, HORTICULTURIST, IDAHO

**T**HAT the use of shrubs has been delayed until such a late period in the development of our landscape architecture is unfortunate in many cases. There are many places where their use will change the entire appearance of the environment. Nature has continually hinted to man the advisability of using shrubs in connection with the beautifying of his surroundings. A glance at Figure 1 will illustrate this point very well. It has been said that nature abhors a vacancy. If man does not improve such spaces nature will rapidly do so. It may not always be filled with the kind of plants we especially desire, but nevertheless there is a natural beauty about the same that we cannot help admire. Weeds are plants out of place. In other words, we consider that plant a weed which springs up and interferes with the production of plants more useful to mankind. The charm of shrubs and vines lies in their purely natural adaptation to nooks and corners about buildings, in the borders, about well kept lawns, at the edge of trees and their true sense of quiet and peacefulness (Figure 2). The beginner in plant grouping is apt to make all of his groups alike. This is very easy to do, and can be avoided by the planter having in mind the finished effect before he begins to plant. A background is made up most naturally of trees of various kinds and sizes. In this border many specimens of rough and uncouth growth can be used which do not look uncouth when a judicious planting of shrubbery is made in the foreground. The gardener should bear in mind that plants in the foreground must stand close examination. For this reason special care should be

exercised in their choice. Flowering shrubs and herbaceous plants are especially adapted for use in such places.

Anyone who has attempted to beautify his grounds soon realizes that the use of shrubs plays an immense part in the gen-

erally attracted to the ground line in small areas the place looks bare and unpleasant. Shrubby allows the landscape gardener to introduce a great variety of form, texture and color in all his work. This materially relieves the openness



Photo by Horticultural Department New Hampshire Agricultural College  
FIGURE 2—WHERE SOME PUBLIC-SPIRITED CITIZENS HAVE CARRIED OUT GOOD IDEAS ON THE USE OF SHRUBBERY

eral composition of the finished whole (Figure 3). It is just as important to improve the ground line in our landscape composition as it is to plant trees to secure a pleasing skyline. If the vision is not arrested and the attention

and crudeness of areas simply planted to trees. A glance at Figure 4 will illustrate this point quite forcibly. This is a reproduction of a small city park. The money expended in flower beds in this park would have purchased a great number of choice shrubs, which, if judiciously used, would make the place very inviting. Almost all the important groups of trees in parks and nature have shrubbery growing at the base. These groups almost invariably contain a good collection of shrubs, and we wonder why our modern parks are so attractive and inviting.

Shrubby has many specific uses. It affords the most excellent screen to cut off undesirable objects. Most of us have a chicken yard, clothes yard or an unsightly rear fence which we can screen from public view by the use of shrubs. If we have barren places or banks which are inclined to wash shrubs can be used here to great advantage. High foundations, rocky areas and unmanageable corners about buildings are all fit places for the planting of shrubs (Figure 5). Shrubs planted under wide eaves and near buildings have a tendency to tie the building to the green sward. Figure 6 shows a pleasing effect at the base of a public building.

It would be unwise for the writer to mention a number of shrubs for planting and expect the reader to choose only from this list. Shrubs must suit the objects for which they are intended to beautify. The writer thinks no shrub-



FIGURE 1—A HINT FROM NATURE IN THE USE OF SHRUBS  
These plants in their struggle for life have grouped themselves in an artistic manner





Photo by Horticultural Department New Hampshire Agricultural College

FIGURE 3—IN PLANTING ABOUT THE HOME SEE THAT THE SHRUBS ARE ARRANGED FOR PLEASING EFFECTS

bery is more beautiful than that which the planter finds growing wild in his vicinity. First, they are easy to grow and require very little attention. Second, each section of our country should develop in harmony with the natural surroundings. Third, the planter is taking very little risk of failure when these shrubs are properly transferred from their native habitat and grouped about the premises under similar soil and climatic conditions. If the native vegetation is freely planted they readily make the place a part of the region in which we live. It is not intended that the planter limit himself entirely to native shrubbery, but if a certain section seems to require native growth by all means use it, and the effect will be far more pleasing than if the most expensive shrubs had been placed instead. The Western coast is rich in native flora of many kinds.

In all shrubbery planting one should endeavor to secure varieties which furnish the greatest wealth of foliage, blossoms and color throughout the year. It is not difficult for the plant lover to go into the nearby woods and secure those shrubs which appeal to him. The Wild

Currant (*Rubus sanguineum*), which blossoms so early in spring and has a very delicate perfume, should be extensively used in shrubbery planting. The Western Mock Orange (*Philadelphus coronarius*) is another very charming shrub that gives pleasing effects in blossom and perfume in early spring. There are many others. These two have been cited by the writer only to show what really choice shrubs we have at our command, but for the most part are not taking advantage of the full charms



FIGURE 5—BERBERIS VULGARIS

Corners about buildings are sometimes difficult to manage. Try a pleasing shrub

which they offer. Each reader can readily make up a long list of native shrubs which especially appeal to him and can be secured at very small expense.

Of the shrubs that are worthy of planting freely in the West, and can be secured from practically any nursery, the following list is preferred: *Viburnum Lantana*, *Viburnum Opulus*, *Viburnum Plicatum* (snowball and varieties), *Prunus*, including flowering peaches, small growing double flowering cherries, plums, almonds, etc.; *Lonicera Fragrantissima* and *Lonicera Standishii* (honeysuckle), *Chionanthus Virginica* (white fringe, purple fringe) and others of this class; *Spiraea*

*Thunbergii*, *Spiraea Arguta* and *Spiraea Prunifolia* (bridal wreath) and several other early flowering varieties; *Deutzia* (many varieties), Common Barberry (*berberis vulgaris*), Privets, Dogwoods, Weiglas, Hazels, Sumac, Forsythia, *Viridisima* (golden bell), *Cydonia Japonica* (Japan quince), *Syringa Vulgaris* (common lilac). (Figure 7.) These shrubs are all adapted for general purpose planting, and suitable for the main effects if so desired. From this list the planter will find several which especially appeal to him for specimen planting. In all specimen planting, no matter what shrub is used, they should be set where they will show their individuality to best advantage, yet to harmonize with the surroundings under which they are placed. This will make up a finished effect. For example, the *Hydrangea* is a fine special purpose specimen, but should be planted with a background of dark colored shrubs or trees. They should not be scattered here and there, as so commonly noticed.

The greatest satisfaction in shrubs, after all, lies in their healthfulness and vigor. To secure this they should be



FIGURE 6—GOLDEN BELL

Graceful shrubbery gives pleasing effects when planted at the base of large buildings

carefully handled at all times. They respond to good treatment just as readily as any of our plants which we Western people are inclined to prize more highly—for example, the apple. Make the ground rich before they are planted. If they are already planted see that they annually have a good dressing of fine manure in the fall. If applied in spring see that it is well incorporated. A little fertilizer about shrubs is readily noticed. In making a shrubbery border see that it is plowed or spaded as deep as possible with an abundance of good humus making material turned under, such as old



FIGURE 4—A GLIMPSE INTO A CITY PARK  
Shrubs have an important part to play here



FIGURE 7—SYRINGA VULGARIS

This shrub gives a variety of pleasure in early spring with its blossoms and perfume



FIGURE 8—GROUP OF DOGWOOD AND LILAC

Choose shrubs for group planting which give pleasure throughout the year. They should harmonize in color of foliage and blossom

manure and litter of various kinds. The labor or expense will soon be repaid in the increased vigor of the shrubs. In using shrubbery for forming groups plant thick, from two to four feet apart, for you want quick effects (Figure 8). As the shrubs develop they can be thinned out for planting elsewhere. It is not difficult to transfer them. They can be either planted in fall or spring in the Pacific Northwest. For climatic conditions similar to Northern Idaho we prefer spring planting. It is a common practice in some of the parks and large estates in the East to remove certain shrubs quite frequently for several years, for in this way they can do service in a number of places. In regard to pruning shrubbery very little needs to be said. The writer thinks that the most severe pruning should be given when the bushes are being planted. The root system should be cut back at this time, and also the top. Pruning for the first few years after the shrubs are set will aid materially in their thorough establishment. When the shrubs are growing rapidly they are apt to make a slender growth, which in some cases is not always desirable. Annual cutting back has a tendency to correct this. The amateur gardener should always bear in mind that for pruning purposes shrubs may be divided into two classes. First, those which blossom on last year's wood, and, second, those which blossom on the wood of the current season, or new growth. Forsythias, Deutzias and Spireas are examples of the first class, while roses (Figure 9), Viburnums and Altheas are good examples of the second class.



FIGURE 9—ROSES

A few well grown bushes add materially to the pleasures of home

Probably the best time for cutting back the shrubs belonging to the first class is after they have finished blossoming. At this time of the year other garden beauties are plentiful enough to occupy the attention. Cutting back at this season will have a tendency to produce a strong, vigorous growth, which is desirable. Heavy cutting back of shrubs while dormant has a tendency to produce wood growth, hence those which belong to class two should be pruned before growth starts. Good pruning requires an insight into the habit of each individual plant, a keen eye, sharp tools, a strong hand and an ideal for which to work. If shrubs are carefully watched each year it should not be necessary to do any heavy cutting. The careful gardener is constantly observing the growth of his shrubs, and delights in pinching out the buds or suckers while they are small (Figure 10). In pruning to form a shrub it is well to cut to an inside bud



FIGURE 10—SYRINGA VULGARIS

(Common Lilac.) Where the art of pruning has been either lost or forgotten

if you wish an upright growth, or cut to outside buds if you wish a spreading growth.

## HOW TO PLANT HARDY BULBS FOR EARLY BLOOM

**H**ARDY bulbs may be planted as late in the fall as the ground can be worked. This must be true, because the catalogues of most nurserymen agree on the point. But I have planted many thousands of bulbs—in rich soil and

manure; if this comes in contact with the bulbs failure with them is inevitable. Under each bulb set out place a cushion of clean, white sand—half a handful under each.

Many planters advise setting the bulbs from two to four times their depth beneath the surface, but this must never be taken as a hard and fast rule. Lilies, for instance, require a greater depth, and in all cases the deeper the bulbs are set the later the flowers in the spring and, possibly on this account, the better the results.

When the bulbs are planted the addition of a light mulch is beneficial, but winter covering should not be added until the ground has been frozen to a depth of at least an inch. Then spread a blanket of leaves—preferably those from hard-wooded trees—or straw, and let the layer be three or four inches in thickness.

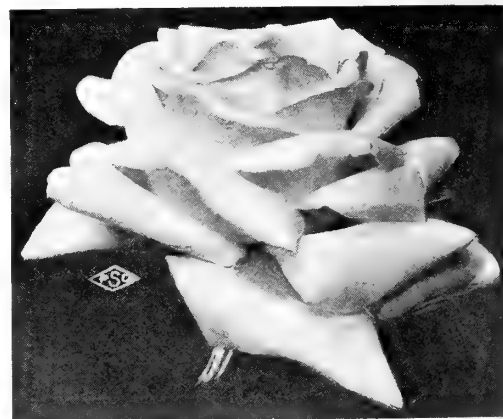
Bulbs may be planted in beds or borders, by themselves or with other plants, generally with hardy perennials or shrubs. They may also be planted—or “naturalized”—in the grass. But in planting them thus avoid regular lines and designs. Confine regularity to formal beds—it has nothing in common



HUGH DICKSON

poor soil—and I have never yet, says a local amateur florist, had the same success with late planted stock that I obtained from that planted earlier. My own rule is to plant the bulbs as early as I can obtain them. Every week of delay means deterioration and, with daffodils especially, there is an absolute loss of strength and vigor when the planting is postponed later than October. My own rule is to plant no narcissi after the end of September.

But whether the Indiana gardener follows this rule or not he may be assured at the outset that success with bulbs demands thorough preparation of the soil in which they are to be planted. As general thing hardy bulbs prefer a light, well drained, moderately rich soil, and this soil should be spaded to at least a depth of fourteen inches. Avoid



FRAU KARL DRUSCHKI



with the practice of "naturalizing." In formal planting do not mix varieties—especially avoid combinations of tulips and narcissi, for example. Limit the formal planting to the use of colors in solid masses, as for instance, crimson tulips in the center surrounded by white tulips on the edges. When naturalizing in the grass use the smaller bulbs rather than the larger, among those best suited for this purpose are the crocus, chionodoxa, snowdrop, scilla, winter aconite and snowflakes. All are cheap and should be planted in liberal quantities.

Usually the hyacinth is allowed first place among hardy bulbs, but in recent years the hyacinth has been losing its popularity. And rightly, too. The position of honor should go to the narcissus, as a matter of fact, and second place should be granted the tulips, while third place should be the lot of the hyacinth. While the colors of the narcissi are confined to a very narrow range of yellow and yellowish white and streaks of red, the hardiness of the bulbs, their quick response to good treatment and their permanence are greatly in their favor. For formal bedding, of course, the tulip and hyacinth must be relied upon, but for all other planting make generous use of the narcissus.

It is almost impossible to say which daffodils are the best for outdoor planting. The Golden Spur is one of the best yellow trumpets, and the Emperor and Glory of Leiden stand in the same class. Among the bi-colors Empress, Victoria and Horsefieldi are the best. In the all-white group select Madame de Graff, Mrs. Thompson and William Goldring. Other desirable varieties are the Bulbocodium, the Maximus, Henry Irving and Major.

Among the incomparable varieties Sir Watkin, with very large petals of a rich sulphur-yellow color and large cup tinged with orange, is one of the best. Others that are good are Stella Superba, Figaro and Cynosure. In the Barril group Conspicuous, with large yellow flowers and bright red-edged crown, is probably

the best for general purposes; it is also the cheapest. In the Leedsii, Mrs. Langtry, with flowers of pale yellow, borne freely and excellent for cutting, is at the head. The two best varieties of the fragrant poet's narcissus are the well known poet's narcissus itself, sometimes called "pheasant's eye," and *N. poeticus ornatus*, which blooms earlier. The most important of the double daffodils are the Van Sion and Sulphur Phoenix.

If I were called upon to designate the best bulb for general planting—the best of all the hardy bulbs—I should select the Darwin tulip. It is only in recent years that its many virtues have become generally known, and it has been a source of much satisfaction to me to note that in the last five years the sales of this wonderful bulb have increased ten fold. It comes into bloom late in May, and the flowers are superior for every purpose—best as cut flowers and best for decorative purposes in the garden. They are borne on stems that are from twenty to thirty inches in length, and they do not deteriorate. Once planted they ask only to be permitted to remain undisturbed until increase makes division advisable, and year after year they produce their splendid blossoms freely and generously. In color and brilliancy of flower, moreover, they surpass all other tulips. It is difficult to select the best, but no garden should be without Ouida, carmine red; Nautica, purplish rose; Kate Greenaway, white and lilac rose; Faust, purple black, and Buffon, rose lilac.

Of the early blooming tulips the best for outdoor planting are: Singles—Artus, dark scarlet; Bell Alliance, bright scarlet; Brutus, scarlet; Rose Grisdelin, the best bright pink; Chrysolora, the best yellow; Canary Bird, yellow; Pottebakker, pure yellow; Pottebakker White, pure white; La Reine, rosy white. Double flowering—La Candeur, pure white; Couronne d'Or, yellow; Duke of York, carmine with white edge; Rex Rubrorum, bright scarlet; Souronne des Roses, deep pink.



IRISH YEWE

At Twenty-second and East Burnside Streets  
Portland, Oregon

The Parrot tulips form an odd and interesting section, but the flowers lack the precision that is the striking characteristic of the tulip. The Parrots, though, are exceedingly effective and always striking when planted in borders.

The best varieties are Admiral of Constanti-nople, orange red and scarlet; Cramoisie Brilliant, scarlet; Lutea Major, golden yellow; Markgraaf van Baden, golden yellow inside and feathered scarlet, purple and green outside. All bloom in May. Among the best of the May flowering or cottage garden tulips are: Bouton d'Or, golden yellow; Gesneriana Spathulata, the finest scarlet among the tulips; La Nigrette, almost black in color; Maiden Blush or Picotee, blush white; Bridesmaid, cherry rose; La Candeur, white; Firefly, a brilliant orange; Retroflexa, bright yellow.



ENGLISH LAUREL HEDGE

Twenty-third Street, near Everett, Portland, Oregon

## SOME ADVICE ON THE GROWING OF SWEET PEAS

BY RALPH R. ROUTLEDGE, ROUTLEDGE SEED AND FLORAL COMPANY, PORTLAND

**T**HE conditions in the vicinity of Portland are ideal for sweet peas, and the finest flowers in the world can be grown here without any trouble, other than good cultivation and the proper preparation of the soil.

The soil for sweet peas should be rich and deep. A good rich loam, with plenty of well rotted manure in it is the best soil for raising good plants that will produce an abundance of blooms of large size with long stems. Soils that are at all heavy should be turned over in the autumn, and during the winter months given a good dressing of sand, hardwood ashes or air-slaked lime. The ideal bed

is made by digging a trench eighteen inches deep and filling it about two-thirds full of well rotted cow manure, tramped down and covered with very good soil.

Sweet peas do best in a position exposed to sunlight, at least part of the day, although a partial shade during the hottest part of the day is very essential to secure the best color in the orange and lavender shades.

Much depends on the state of the weather as to when the seed may be sown out-of-doors; but they should be sown as early in the season as the ground can be worked. For very early flowers

late fall planting is advisable, but the ground must be well drained or the seeds will rot. Whether you have prepared a special bed or not it is best to plant the seed in a furrow about six inches deep. Sow the ordinary seed thickly, and the "Spencers" more sparingly, for the new "Spencers" are robust growers and do best if not crowded. Cover the seed with about an inch of soil, pressing it down lightly. As soon as they are above ground two or three inches thin out to two inches apart ("Spencer" varieties four to six inches); if they are closer than this they do not usually attain their full development. As soon as the plants are about a foot high the rest of the soil may be filled in the trench.



SPENCER SWEET PEA

ETTA DYKE SWEET PEA

They should be staked up either with branches of brush, stout stakes on which wire netting has been fastened or trellises of string. These should be at least five feet high, and six feet is better. It is advisable to put up the trellis before planting, and then a double row of seeds (one on each side) may be planted.

During the dry weather they should be watered thoroughly and frequently at the root, not on the vines and flowers, and given an application of some quick-acting fertilizer when buds appear. A mulch, or rakings from the lawn, will be found beneficial during hot weather. The flowers should be cut as often as possible, and all withered blooms should be removed to prevent the plants from running to seed, which would stop them from continuing in bloom. When picking nip off the faded blooms, even though you leave the stems; it is little trouble, and this will keep the seed pods off.

Sweet peas should not be grown on the same soil two or three years in succession. In some gardens there is just one spot where it is convenient to have them, in which case the soil, to the extent of a foot wide and deep, should be removed and replaced with new soil from another part of the garden.

If sweet peas should be attacked by the green, black or white fly they should be thoroughly sprayed with some reliable nicotine preparation.

The greatest enemy of young sweet peas is the cut-worm or slugs, and in certain places they are so destructive as to almost prevent some growers from having a good stand of sweet peas at any time. They usually eat off the young shoots as soon as they appear. There are several prepared powders, sold by the seed stores, but a very effective remedy and one that any one can get is "soot"—clean your stove pipe. It will do the pipe good and keep away slugs if worked into the top soil at planting time or

sprinkled over the young plants. Lime, ashes and tobacco dust are used by many, but they are not always effective.

The Oregon Sweet Pea Society has lately been organized by Captain George Pope, and all lovers of sweet peas should join hands and make the coming Sweet Pea Show a grand success. The show will probably be held the latter part of June or first of July.

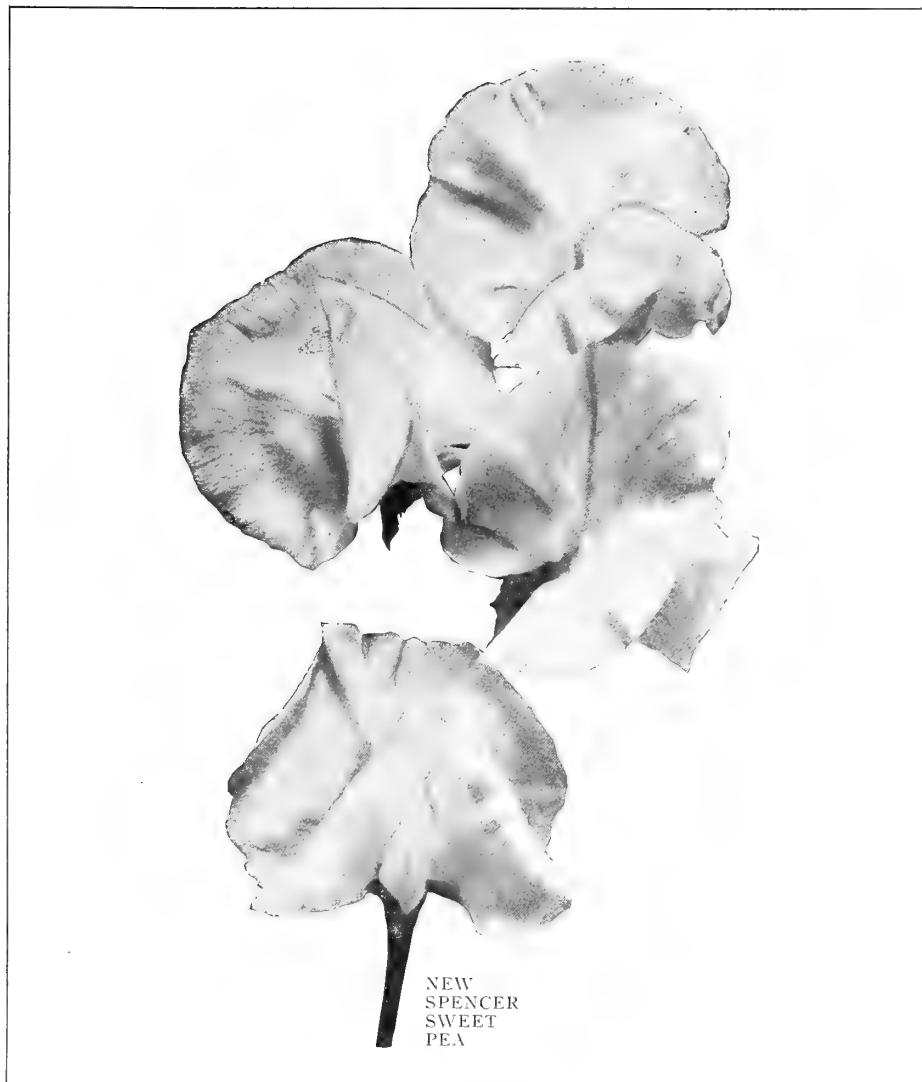
Sweet peas are undoubtedly the most popular annual flower to date, and it is not to be wondered at, for there is no flower that will give such a profusion of fine blooms for cutting with as little care. The new "Spencer" types are the latest, and well worth the difference in price. Those who have tried the true "New Spencers" will never be satisfied again with the old types.

The flowers of this new type come three and four on stems twelve to eighteen inches long, and are not only of extremely large size, but are distinct in having the outer edges of the standard and wings beautifully ruffled or wavy; the tissue being so full that there is not room for it to lie flatly expanded or smoothly rolled. By reason of its "sportive character" it has required years of labor to perfect the original "Countess," but this same tendency "to break" has resulted in giving us a number of colors which already come true from seed, and

which delight every lover of sweet peas who can afford to buy them. While most profuse in flowering they are very shy seeders, and the true "Spencer" type can never be produced cheaply.

This new giant wavy type of flower originated in the garden of the Countess Spencer, Althorp Park, Northhampton, England, and was named after the countess. The original flower was pink, but now we have all the leading colors and shades, and they are truly magnificent. On account of the sportive tendency of this new race and the rapidity with which new named varieties have been introduced, there is some confusion and duplication. I believe many of the same colors are being offered under more than one name—not purposely, but unknowingly. However, this will soon be overcome, for the field test, shows, etc., will soon eliminate the inferior ones and verify the true ones.

Do not be discouraged by past failures in the growing of this beautiful and fragrant flower. A little care in the selection of seed and in planting, then when the blossoms come clip them daily, and you will be rewarded by a continuous and generous supply of flowers, lasting well into the fall season, that will afford pleasure to every member of your household.



NEW  
SPENCER  
SWEET  
PEA



SPANISH BROOM

Grounds of residence of Dr. Jones, Portland, Oregon

# LAYING OUT AND BEAUTIFYING HOME GROUNDS

BY ARTHUR L. PECK, OF J. B. PINKINGTON NURSERY, PORTLAND, OREGON

**N**OWHERE in the United States is there an area that lends itself more readily to the art of the enthusiastic lover of ornamental plants. The climate is such that we are enabled to draw upon a wide range of materials and to bring about results that are great sources of pride and gratification. The Northwest is rapidly being peopled with progressive Easterners, and they bring with them the desire for the best in all things, whether it be orchard land, a farm home or the fruit growers' paper that periodically comes to their abode. Naturally this longing for better things will be extended to the lawn or mere yard which surrounds the home, and it is for these men that a few hints are presented in this brief article with the hope that higher ideals in home decoration may be attained as each year's improvements are added to those that have been previously developed. Volumes have been written with a view to setting forth the value of a proper design in the home lawn. We are all inclined to agree with these writers, and many of us are inclined to carry out the suggested improvements if the way is simply made clear.

What is known as the natural style must be adopted in carrying out nearly all of the designs for the rural home. The great expanse of country everywhere apparent, broad meadows, mountains, great forests and natural water courses, force us to treat the home grounds in a manner somewhat after nature's methods if we wish to produce an harmonious composition. Graceful,

irregular curves in walks, drives and surfaces, irregular masses of foliage, broken and curving sky lines and an absence of all geometrical lines should characterize our home grounds. The house is, of course, architectural, or we will assume it to be. The lines near the buildings, then, may properly be made to take on a formal character, and if a straight line seems to be the simplest treatment of a walk one is justified in so laying it out. The usual conception of the natural style may be expressed by the term, "copying nature." This, in a measure, is incorrect, because in almost every instance we improve on nature's work, or at least so guide her efforts that the result may present a picture with a little more of the polish and the beautiful in it than if she were to work unaided. In other words, we attempt to express in a limited and refined manner the same ideas which nature spreads before us, but in so doing we are controlled by our inability to take advantage of the unlimited scale with which she works, and so our creations must bear a much closer inspection.

A plan of some kind is the first important consideration—no matter how simple the work is one should draw up a design before carrying out any improvements. This plan should locate all buildings, drives, walks and plantings. Perhaps the idea may seem somewhat formidable at first, but anyone can draw a diagram, and if a foot rule is handy by all means draw it to scale. In locating buildings consider first of all the conditions which affect health. This

would include drainage, exposure, prevailing winds, water supply, relation of barn to house and the average amount of sunshine. Next comes convenience; without it landscape beauty becomes a nuisance, and we will always have these inconvenient objects confronting us. Human nature is the same the world over, and if we try to carry one too far out of his way he is going to cut across, even at the expense of a good lawn. A house may be a model so far as the architecture is concerned, but we all know that if the arrangement is such as to be inconvenient the whole is a failure. So in laying out the drive, in locating the buildings and in all plantings the idea of convenience should hold a very prominent place. The vegetable garden should also be located with this idea in mind, so that one can easily reach it from the house and farm buildings. A small tract of land it is, to be sure, but from it we obtain a great many of the things that help to make country life what it is. One should plan to work it at odd times, and if he does this it must necessarily be located near the executive center of the farm.

One of the most serious questions is the location of the drive. Many conditions bear upon this problem, and they must all be carefully considered. What kind of traffic must it carry; is it a combination drive and service road; does it swing too close to the house on the way to the barn; can supplies be easily taken from the wagon to the house; what are the topographical conditions along the drives; these are a few of the questions



PRIVET HEDGE

Nineteenth Street, between Lovejoy and Marshall, Portland, Oregon





SECTIONAL VIEW OF J. B. PILKINGTON'S NURSERY, PORTLAND, OREGON  
Colorado Blue Spruces and other Conifers

one must answer before the road can be permanently located. The curving of a drive to make it attractive seems to have taken a firm hold. This is a mistaken idea, however, unless other conditions warrant the curve. Man naturally desires to "get there," and to be forced around a long detour simply because the road curves is very irksome. Every curve should be justified. We do not hesitate to turn aside for some obstacle, and various features may be introduced to make our curves justifiable. A clump of trees, a large mass of shrubbery, extra fine views, irregularities in the contour and the manner in which the entrance is made may be used in relation to our drive. An appreciation for the size or importance of the obstacle must be shown, however. For instance, it would be hard to imagine one turning very far aside to avoid a small flower bed stuck full of nasturtiums and alyssum. On the other hand, a fine clump of oaks or maples would turn us aside without a single question arising in our minds; in fact the action would be the most natural thing in the world, and one would never object to the detour.

It would seem unnecessary to urge the importance of a good surface, easy grades and perfect drainage in the wake of all that has been said advocating good roads. These are matters, however, that should be carefully considered and thoroughly worked out by the one who is developing his home grounds. Walks naturally present problems that are very similar to those associated with drives. They should be located where they are necessary, but care should be taken that

they do not cut the lawn up to any great extent.

The foundation work taken care of, it is then time to plant with a view to setting off the home grounds, and to so frame them that they will present an attractive picture. Here the art of the planter can be given full play. If the natural style has been adopted the planting should present an irregular outline along the edge of the lawn and the sky line should be broken here and there by a small tree rearing its head above the rest of the surrounding shrubbery. In general it may be said that a broad lawn should be the principle feature with the exception of the home itself. Let the general impression be that the center is all open. Carry most of the planting to the borders, and if specimen trees or plants are to be used they should be supported by these border masses. A great many mistakes are made in what is known as mass planting because the planter often lacks the boldness or the means to obtain shrubs and trees in sufficient quantities to produce the desired effect. To overcome this trouble one might plant only a small portion of the border at a time. The value of a plan, then, becomes apparent because every improvement, however modest, can be made in a permanent manner, and after a few years we will find the original idea well rounded out and fully developed.

The subject of plant materials is very broad, and one which should be treated by itself. In general, however, it can be said that all the species used should appear to be at home amidst their sur-

roundings. Plants used because they are rare, exotic or grotesque have no place in the lawn around a rural home.

Rare plants may be of such a character that they may be used, especially in close proximity to the home, but one should strive to introduce sorts that attract because of their own natural beauty rather than because of some freakish habit the plant happens to possess. We should guard against making our home grounds into a horticultural museum. It is desirable to have a considerable amount of shrubbery around the house or near to it, as it serves the purpose of setting or uniting the home to the grounds, and this material must be carefully chosen because it is to be in a location where it must bear very close inspection. The plants should be perfect and the character of the foliage fine rather than verging on coarseness. It will be readily seen that some shrubs which produce beautiful effects at a distance of one hundred feet would be out of place if used ten or fifteen feet from a view point. On the other hand, many shrubs can be used in both situations, and with equally pleasing results.

A fair knowledge of these materials must be gained before one can carry out the best work, but if there is the desire to do one need not be held back because of this lack of acquaintance with plant materials. Careful study of the best catalogues and a close observation of what others are doing will soon place one where he can work out his own planting plan and proceed with the development of his home grounds.





OREGON GRAPE BORDER  
Twenty-second and Everett Streets, Portland, Oregon

## CARE OF ORNAMENTAL TREES AND SHRUBBERY

BY GEORGE C. ROEDING, FANCHER CREEK NURSERY, FRESNO, CALIFORNIA

**N**O country in the world offers better natural advantages for the grower of ornamental trees and shrubs than California. With a variety of climates embraced in a limited area from the torrid heat of the Colorado desert to the balmy and equable climate of the southern coast counties, thence extending to the far northern counties, with their abundant supply of rainfall during the winter months, and where the temperature never goes above 70 degrees Fahrenheit, conditions prevail in which nearly every variety of tree or plant from the temperate, sub-tropical and tropical zones finds surroundings and soils conducive to successful culture.

California people are lovers of trees, and are becoming impressed with the advantages which nature has bestowed upon them so bountifully, hence there is a steady and increasing demand for the very best that can be obtained in ornamental stock.

If there is any one thing which adds to the beauty of a home, be it in the country or the city, it is attractive grounds. No farm can afford to be without a few trees and shrubs around the house, and it seems strange indeed that ornamental planting is not more observed by those who wish to make life in the country worth while. Money expended in this direction is well invested, not only from the fact of its creating pleasant surroundings, but because the beautifying of a place enhances its value and renders it salable, often at a handsome advance. Money cannot buy the satisfaction which one derives from the realization of watching the growth and development of ornamental vegetation.

A grave mistake made by many people is to plant haphazard without any prescribed plan, with the result that when the plants reach maturity they appear to

be out of place simply because they were not planted in a suitable environment to begin with. It is an easy matter to draw a rough sketch to a scale for modest ground, which should be submitted with data as to area, soil, climatic conditions, etc., to some competent person to

make a selection of plants. Instances have been observed where thousands of dollars have been expended in an attempt to beautify extensive grounds, which, when acquiring age, possessed nothing to commend them to one's sense of the beautiful in plant life, simply because the planting had been done without a defined plan. Many handsome specimens, not being in harmony, were lost sight of entirely. It is not so much the plants themselves which add to the beauty and picturesqueness of a garden as it is the grouping of them to obtain results. In order to secure this a landscape gardener pictures in his mind the effect of his groups many years in the future, and his plans are drawn accordingly. Imitate nature, avoid having small beds with narrow walks with not enough of any one thing to bring out pleasing effects. Have a few open spaces planted to grass and obstruct the views of undesirable objects with tall growing shrubs and trees.

It will repay the intending home-maker who proposes to plant extensive grounds to engage a competent man to draw the plans and select the plants. It is just as important to do this as it is to engage an architect to draw plans for a house.

All varieties of deciduous trees should be planted in the dormant season, from January to April, just as soon as sufficient rain has fallen to soften up the ground so that large enough holes can be dug to receive the roots readily. Evergreens transplant best from February to May, and in localities where there



HIMALAYAN CEDAR (CEDRUS DEODARO)  
Twenty-third Street, between Everett and Flanders, Portland, Oregon  
North, Portland, Oregon



CUT-LEAF JAPAN MAPLE  
Specimen in grounds of North Pacific Sanatorium, Portland, Oregon

are not great extremes of heat during the summer months planting may be done as late as June. Palms can be safely transplanted from September until June of the following year, but to successfully grow them during the winter months they should never be dug fresh out of the ground from December to February, as they are dormant at that season of the year and will invariably "go back."

No matter how carefully a deciduous tree is taken up there are always some roots which will be bruised or broken, and these should be cut off to smooth, sound wood. All other roots should have a fresh cut made on them and shortened in so they will fit into the holes readily without doubling up. Before planting the ground should be thoroughly powdered or spaded and the holes should be dug sufficiently large to accommodate the roots without cramping. Far better to dig the holes too large and fill in with surface soil than to err by having them too small. It is a safe rule to set the trees a few inches deeper than they stood in the rows at the nursery.

Evergreens and palms are always taken up with a ball of earth and should be handled with care so as not to break the ball. In planting the rope used in tying the sacking to the ball should be cut, but the sack can remain or be allowed to drop to the bottom of the hole. The earth around deciduous trees should be well tramped, and in the case of evergreens it should be well tamped with a bar; avoid at all times tramping on the ball itself, as this will cause the soil to fall away, frustrating the very object of making the ball to begin with. After planting water freely, and the following day draw loose soil around the tree, filling up the basin left for watering. In the case of deciduous trees of any size

no water at all will be required if it rains occasionally during the dormant period and the ground around the tree is well settled until the growing season sets in, when not less than ten gallons should be given to a tree at intervals of three weeks apart. With evergreens proper precautions should be taken to retain the moisture in the ball of earth, and it will be necessary to water more frequently. This can be determined by digging down and feeling the ball; if it is dry and hard water should be given immediately and be applied often enough to prevent a repetition of this condition.

Never place manure or fertilizer of any kind in the hole, as the young and tender roots will be killed and the plant otherwise injured, sometimes fatally.

The cause of many trees failing to grow or start as early in the spring as they should is directly traceable in many instances to the planter failing to cut his trees back. In taking up a tree from the nursery, at the very best calculation, three-quarters of its roots are sacrificed, so that top-pruning is just as important, or even more so, than root pruning to insure the life of the trees to begin with and promote a satisfactory growth during the growing season. Not more than five lateral branches should be allowed to remain, the lowest should not be closer than six feet from the ground and the highest nine feet. These branches should have two-thirds of their growth cut off at the very outside. Trees which were originally eighteen to twenty feet high, or even higher, should be cut back to at least ten feet from the ground when set, and smaller trees to eight feet.

Evergreens, and especially conifers, should have their branches shortened in, starting in at the base cutting away one-third of the growth up to the top. When completed the shape of the tree should

resemble in appearance the outline of an acute triangle.

Other varieties should have branches shortened and thinned out to secure good form. This pruning is necessary to reduce the amount of foliage, lessen evaporation and to reduce the growth so that the remaining roots can retain life in the plant until such a time as it begins to develop, when root and top will grow in a corresponding ratio.

Trees of all kinds require careful attention the first season after planting. The soil should be kept normally moist, and after each irrigation well worked with a hoe or spade. In the hot interior valleys, where the heat is intense, partial shading by building a skeleton frame and covering with burlap will do much to insure evergreens growing and becoming established.

Standard deciduous trees branching six to eight feet from the ground should have their bodies wrapped with burlap or paper the first and second years to prevent sunburn.

In pruning trees and shrubs should be allowed to assume a natural form as far as possible. Nothing is more hideous than to see trees pruned to assume shapes and forms entirely foreign to them. The individuality of trees is what renders a pleasing feature to our landscapes and makes them appeal to every lover of nature. In pruning the predominating idea should be to retain the natural shape of the tree. Cut off straggling branches, thin out the head where it becomes too dense and remove all dead wood. This applies to deciduous trees. In coniferous trees the branches should be allowed to touch the ground, removing none, except in such instances where there are two parallel leaders, when the weaker one should be cut out.

## NEAT AND ATTRACTIVE PACKAGES SELL GOODS

**T**HE MODERN WAY of marketing goods is the "trade-mark" and the package way. The trade-mark is essentially nothing more or less than an identification, so that if you like the goods you can purchase them a second and a third time, and thereafter, and know you are getting the same brand.

The package serves not only as a carrier of the trade-mark and the container for the goods, but it is the buyers' protection, as it insures cleanliness and sanitary packing.

The commonest things of every-day consumption are now being sold in packages.

The farmers formerly brought butter to town in crocks and traded it for gro-



ceries. Now it is put up in the creamery in squares, wrapped in parchment paper and sold under a trade-mark.

The quality is uniform and a demand grows for certain brands. Is there anyone who will say the dairying industry is not in a better condition today than before the introduction of the trade-mark and package idea which revolutionized the butter business?

The manufacturer or packer of a trade-mark package must keep the quality of his brand up to the mark, else he will fall behind in the race. He must improve it if he can, else his competitor will out-distance him. Such rivalry is desirable and gives the consumer the best value for his money.

The manufacturer or packer of a trade-marked brand of merchandise can create a demand for his commodity by advertising it to the consumer, and the dealer cannot stop handling it at will. Just as long as he keeps up the demand he is sure of a sale.

His safety lies in maintaining the quality of his brand, and he will know that it reaches the consumer as it leaves the factory or packing house—without being tampered with—without becoming contaminated by handling with unclean hands.

Twenty-five years ago who would have said the humble codfish would ever be sold in a neat little package with a trade-mark? Who would have expected to buy cube sugar in a lithographed carton; milk or cream in a tin; rice in a box; cream cheese in a tinfoil, trade-marked package, or a little wooden box with a label?

The pig, but a few years ago, yielded ham and bacon and lard and sausage. Today he yields a score or more of articles, sold under trade-marks, in cartons, tin and glass.

The packer or grower of apples uses the modern way and puts up his fruit in a package which bears his own trade-mark, and which keeps the apples in good condition and makes it convenient for the buyer to carry the package home.

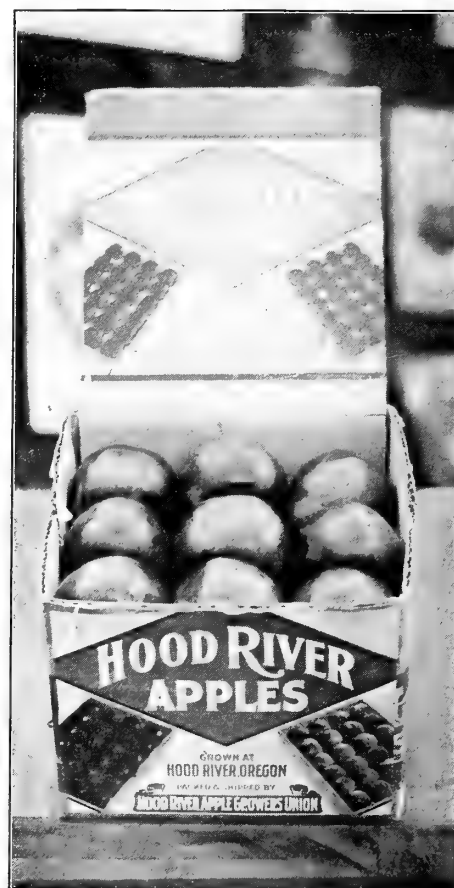
Pack your apples in "Rulofson's Corrugated Cardboard Boxes."

Many a person would carry home a box of fruit who would not carry a paper bag. The bag is inconvenient to carry. The thought of the bag leaves the fruit unsold. In a neat box the inducement to buy is increased. If the fruit is good and some is wanted the buyer knows what brand to ask for. For further information concerning this package write to A. C. Rulofson Company, Monadnock Building, San Francisco.

[Editor's Note.—The editor saw this package for the first time at the Spokane National Apple Show in 1909, and was so impressed with it that he secured some photographs, from which he had cuts made, publishing a special article about this corrugated box for packing fruit, which was illustrated on page 48 of the July edition, 1910. Most of the subscribers of "Better Fruit" know that the editor was reared in the fruit business in California, and has been engaged in the fruit business in Hood River Valley for eight years, being manager of the Hood River Fruit Growers' Union for six years and of the Apple Growers' Union for three years, and continually a director of same, consequently has had a splendid opportunity for studying the marketing problem of the fruit business, and during these several years has interviewed and discussed the marketing problem with probably several hundred Eastern dealers. The editor was so impressed with the value of this package that in his address before the Western Fruit Jobbers' Association at Sacramento, California, the following extract was included: "Gentlemen—If you want to do more business you must endeavor to increase consumption, and, I think, by creating a sale for apples by the box will assist in doing it. Some package should be perfected not only for apples and oranges, but for other fruits that would contain a small quantity neatly done up and ready for the purchaser. I believe we need, and should have, a package that would hold a dozen apples, a dozen oranges or a dozen of some other fruit, and such packages should be made of a size and shape so that six, eight or ten might be put in an ordinary sized case. Mr. A. C. Rulofson, Monadnock Building, San Francisco, has invented a small package which bids fair to be an important factor for increasing the retail sale of apples. The paper bag is a very inconvenient package in which to carry home a dozen apples, particularly if you get into a crowded street car and hang

on to the strap. You know the bag will burst and, therefore, you won't buy the dozen apples. The package made by Mr. Rulofson is composed of corrugated paper, holds a dozen apples and is supplied with a small, neat wooden handle similar to the ones used on shawl straps. It is a very convenient package and one which the retail fruit dealer can have ready for immediate delivery, and one that will not go to pieces, and the customer can conveniently carry it in the crowded street car or anywhere else."

There were several hundred fruit dealers present at this meeting, and the editor conversed with a large number afterwards who enthusiastically indorsed the suggestion. It is needless to say that the wholesale and retail fruit dealer will welcome with open arms such a package. The consumer, who is carrying his fruit in a paper or basket will probably be more enthusiastic than anyone else. The customer wants just this kind of a package, and just such a package is necessary to increase sales. Growers know how to grow good fruit. The marketing of it is a problem with the fruit grower today, and any package that will help increase sales should be adopted. It is the duty of every fruit grower to do everything in his power to help increase sales for his own good. It is believed by those who have seen this package that it would be an assistance in doing it and, therefore, every fruit grower should order a moderate sized quantity of them for this season and watch closely the result, which it is believed without any doubt will be a great factor in increasing consumption.]



# HOW TO COMBAT WITH THE PEACH TREE BORER

BY J. P. GREEN, OREGON AGRICULTURAL COLLEGE

ONE of America's most noted peach growers, J. H. Hale, of Connecticut, has said: "The peach borer has killed more trees than all other causes combined." Comparatively few peach trees planted east of the Mississippi River in the last twenty-five years have lived to produce a crop without suffering more or less from this dreaded insect. The peach tree borer has ranked as one of the standard and serious pests of the United States for nearly a century. It has been the subject of much discussion in the agricultural literature during that time, and it is probable that more schemes for its control have been devised than for any other of our many insect pests.

Yet in all this time there were few thorough and scientific experiments to determine the efficiency of any of these methods. This led Professor Comstock, of New York, to plan, several years ago, a series of experiments to test the so-called remedies; and he had an orchard of nearly 400 trees planted for this sole purpose.

The peach tree borer is a native of America, being found only in the United States and Canada. The peach tree is a foreign plant, but had doubtless been in cultivation for a century or more before any mention was made of its being attacked by the borer in this country. Probably the first reference to this insect is that of Peter Kalm, June 15, 1749, in his "Travels Into North America," when he mentioned its appearance near Albany, New York; and a hundred and fifty years ago it had become a serious menace to the peach industry. In the years 1800-12 it became a serious pest in New Jersey. Pennsylvania and Virginia; in 1823 it was common in Massachusetts and North Carolina; by 1850 it had become quite common in all peach orchards from the Atlantic Coast to the Mississippi River, and by 1871 had attained a similar reputation in Canada. At present it has to be combated by nearly every successful peach grower in the states east of the Rocky Mountains. Apparently it has not yet established itself on the Pacific Coast, and occurs west of the Rocky Mountains only in Colorado, and possibly in New Mexico.

In Oregon Bulletin No. 45, 1897, pages 100-107, there is a good discussion of the Oregon peach and prune borer, supposed to be *Sanninoidea exitiosa*, but specimens submitted to Washington authorities (according to Professor Slingerland) show that the Oregon species is *opalescens*, thus there is yet no definite evidence that *exitiosa* occurs in Oregon. Professor Cordley says in the bulletin: "This insect, which promises to be one of the very worst insect enemies of the prune, is the well known Eastern peach tree borer. It was described by Thomas Say nearly seventy-five years ago under the name *Aegeria exitiosa*. Several years ago the species was transferred to the genus *Sannina*, since when it has been known as *Sannina exitiosa*. Recently, however, Mr. Beutenmuller, who is mak-

ing a critical study of North American Sesiidae, has concluded that the species should form the type of a new genus, *Sanninoidea*, so that henceforth this insect will probably be known scientifically as *Sanninoidea exitiosa* (Say). The peach tree borer was probably introduced into Oregon about 1880, first appearing near Salem. It is presumed that it came in trees from Eastern nurseries. At the time of this bulletin it was considered one of the worst pests with which Oregon orchardists had to contend; and, in addition to peach trees, cherry and plum trees sometimes suffer from their attacks.

In 1823 specimens of the moth of the peach tree borer were submitted to Thomas Say, of Philadelphia, and he named and described them as *exitiosa*, the specific name by which the insect is now known the world over.

The insect was popularly known as the "peach worm" or the "peach tree insect" in earlier writings. Some time prior to 1850 it had received the name of "peach tree borer," and usually under this popular name it has since been discussed. Almost every peach grower east of the Rocky Mountains under-

which hatches the larva or "borer," which, when full grown, enters the pupal stage, and from which the adult or moth form of the insect emerges.

When full grown the larva is very light yellow in color, a worm-like creature about an inch long, and in addition to its six well developed thoracic legs it has five pairs of pro-legs, one each on the third, fourth, fifth, sixth and last abdominal segments. The head is of a shiny, dark reddish brown color, with its strong mandibles or jaws nearly black. The spiracles or breathing holes along each side of the body are nearly circular and dark brown in color, with a black border.

The adult form or parent of the peach tree borer is a moth, which belongs in the family known as the clear-winged moths, many of which resemble bees or wasps in appearance more than they do ordinary moths. The male and female moths differ so strikingly in appearance that one often wonders if they can be the same species. The general color of the male moth is a deep steel-blue with a glossy luster like satin, the four wings are transparent and glass-like with a light tinge of smoky yellow. The female moths are a little larger than the male moths, their wings are wholly of a deep steel-blue color with a satiny luster, except a broad orange-colored band extending nearly around the abdomen on the fourth, or on both the fourth and fifth segments. The front wings are opaque, being entirely covered with the deep blue scales, while the hind wings are transparent over about one-half of their area.

The peach tree borer apparently has a decided preference for the peach tree, as no other plant is so often or so seriously attacked. But the insect does not confine itself to the peach, having been found on the cherry, plum, nectarine, apricot, flowering almond and the azalea.

The "borer" or caterpillar probably never leaves the tree upon which the egg is deposited on the bark, and the insect spends nearly eleven months of its yearly life-cycle on or in the tree. Thus it can easily be transported for long distances on infested trees, and while this is doubtless the way in which it usually reaches new localities. As large peach trees are rarely moved the growers of nursery stock are mostly responsible for the introduction of the insect into new localities. It is one of the most serious of the insect pests that are now being sent out by nurserymen. When the pest once gets a foothold in an orchard or locality it may be slowly distributed from orchard to orchard by the adult insects or moths, which fly readily, but apparently not for very long distances.

The borers often kill young trees by girdling them with their burrows just beneath the bark underground, and thus rendering their destructive work very inconspicuous. Those trees that survive the attacks of the borer are usually easily recognized by their weakened.



PEACH TREES PROTECTED BY WIRE SCREEN AND BANDAGED WITH PAPER  
(After Slingerland, Bulletin No. 176, Cornell Experiment Station)

stands what insect is referred to as the "peach tree borer." However, the peach tree borer of the Pacific Coast states is a different kind of insect, bearing the scientific name *Sanninoidea opalescens*. Probably when *exitiosa* reaches these states it will be known as the Eastern peach tree borer in order to make a distinction between the two species.

Most peach growers have seen this insect in its destructive or "borer" stage, and doubtless but few ever saw it in any other form. The peach tree borer, like all other species of the order Lepidoptera, undergoes complete metamorphosis, beginning life as an egg, from



sickly appearance when compared with perfectly healthy trees. Even if the tree does survive and bear a certain amount of fruit the work of the borer weakens the tree more or less, the damage done depending much upon the age of the tree and whether it has received proper care.

The work of the borer always causes the tree to exude a large amount of a mucilaginous substance, which forms a gummy mass around the infested portion, this mass often being visible on the surface of the soil, about the base of the tree. On plum and prune trees there is very little of the exudation, thus making it more difficult to find the borers and harder to combat them in these trees.

The peach tree borer undergoes a complete metamorphosis in its life history, passing through the four stages—egg, "borer" or larva, pupa and the adult or moth.

The borer always passes the winter in the larval stage. In the South they are nearly full grown before hibernating, while in the North they are quite small at the time of hibernation, some being little more than half grown. However, in most localities it is possible to find borers of all sizes in the trees during the winter. It has been found that most of the full grown borers pass the winter in their burrows underneath the bark, while the borers that are less than half grown pass the winter curled up in a thin half cocoon-like structure, usually at the upper end of their burrows, which are between the outer and inner surface of the bark.

This peculiar method of hibernation of the smaller borers is of considerable importance economically, as several of the Northern peach growers have discovered that they can quickly remove most of the borers a safe distance from the trees during a warm spell in winter by simply hoeing away the exuded gum from around the base of the trees.

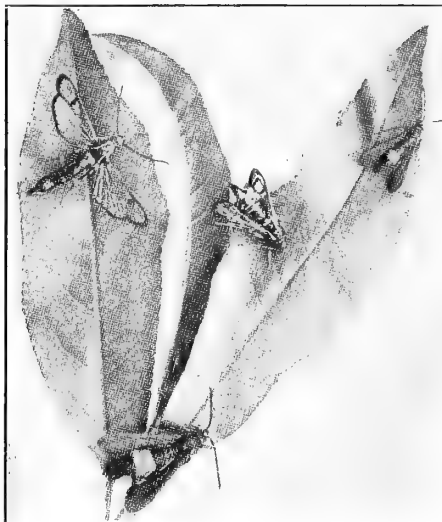
The peach tree borer apparently does not feed during the winter, at least such is the case in the Northern states.

In the latter part of April or early in May the borers awake from their winter's nap and begin feeding on the bark of the tree. Climatic conditions influence the time of beginning work to a great extent. The older borers usually begin work in their burrows where they left off in the fall, while the younger ones, which have hibernated in the outer bark, begin feeding there; however, they soon burrow deeper into the bark until the wood is reached, where they excavate, partly in the wood and partly in the bark, a burrow varying from one-half to an inch or more in width and from two to several inches long.

Occasionally a borer may be found in the trunk of the tree above ground, and even in the root six or more inches underground, but most entomologists agree that the most destructive work occurs on the trunk or roots about the surface or at a short distance below the ground.

The borers do the greatest damage during the season of the year in which they make their greatest growth. In the South this occurs in the late summer and

fall, for most of them pass the winter as full grown borers, but in the North the season of greatest growth is in May, June and July. It is surprising how rapidly the smaller borers grow in the spring. In experiments at Cornell it was found that borers, only one-fourth inch long on April 19th, grew so rapidly that in ninety days, or by July 20th, had not only grown into caterpillars an inch long, but had spun cocoons, transformed into pupae and the adult insect or moth had emerged.



MOTHS OF PEACH BORER

(After Slingerland, Bulletin No. 176, Cornell Experiment Station)

When full grown the borer leaves its burrow under the bark and proceeds to make around itself the cocoon. This is a rough, brown, elongated oval capsule with slightly pointed ends, and is about an inch in length. It is constructed by the borer of its excrements and particles of bark, these being bound together with gum and a thin smooth inner lining of silk. It takes the borer from two to three days to complete its cocoon. The cocoons are usually attached to the outside of the bark of the tree at or near the surface of the soil, but occasionally one is found two or three inches below the surface or lying loosely in the soil. The borer spends from three to five days making its cocoon, then sheds its skin and transforms into the pupa.

Pupa is the third stage into which the peach tree borer is transformed. It is of a dark brown color, considerably lighter when first formed and measures about three-fourths of an inch in length. The male and female pupae are readily distinguished; the female is larger and more robust, and it has but one row of spines across the back of the seventh abdominal segment, while there are two rows of these spines on this segment of the male pupa. The pupal stage is the resting stage, and is where the change from the larva to the adult stage takes place. The pupa is not capable of moving about, but moves the abdomen slightly when disturbed. No feeding takes place in this stage. According to all printed reports the pupal stage lasts for about twenty-one days.

When the pupa is fully mature, or when the adult insect is ready to emerge, the pupa uses the hard, sharp, beak-like prominence on its head to break through the end of the cocoon, and then by means of the rows of spines on its back it moves or hitches itself forward until it projects for half its length or more out of the cocoon. This movement of the pupa out of the cocoon and the wise precaution of the borer to build its cocoon near the surface of the soil usually results in bringing the projecting pupa out of the soil. Thus the adult insect or moth, which is delicate and soft when it first emerges, finds itself at once in its favorite element—the open air.

The moth bursts through the pupa skin, which splits down the center of the back for a short distance. After carefully drawing out its wings, legs, antennae and tongue from their pupal sheaths it may crawl a short distance, where it rests for from twenty minutes to half an hour to let its wings expand and dry. It is then ready for active flight.

The adults are most active during the day, and fly but little, if any, at night. One who is familiar with them may, by close observation, see them flying about in the orchard during the summer months. No data is given to show exactly how long the moth lives, but it is probably not more than a week, the female moth probably living just long enough to mate and deposit her quota of eggs.

One female is capable of laying from 200 to 600 eggs, which are scattered over the trunk of the tree, the larger number within six inches of the soil and a few as high as eighteen inches above the surface of the soil, no attention being given to placing them in protected positions. They have been found singly and in groups of nine or ten. The eggs are of a light chestnut color, somewhat elliptical in form, and are slightly flattened. They average about .02 of an inch in length and a little more than half as wide.

Probably most of the eggs are laid in July and August in the Northern states. From these eggs there hatches, in a week or ten days, minute larvae, the young borers, which at once work their way into crevices of the bark, and soon begin feeding on the inner layers. A minutely small crack will suffice for the entrance of the borer, which fact has a very important bearing on the question of preventive applications for the pest.

At least eight different enemies of the peach tree borer have been found, which, in some localities, may play an important part in the control of the insect.

Although American peach growers have been fighting the peach borer for a hundred and fifty years the results from present day methods of warfare are not strikingly different from those recorded in 1806. Most of the applications now recommended were devised nearly a century ago.

Cultural methods have no direct effect on the borers unless it be to cultivate and fertilize the trees so that they will outgrow their injury. It is certainly



much easier to successfully combat the borer in well cared for orchards.

Owing to the fact that for many years the peach tree borer has been a common and serious enemy of the peach a large number of combative measures have been tried and recommended for its control. Only a few have been successful, these being either actual destruction of the insect or some application to the bark of the tree to prevent the entrance of the larvae.

The only practical methods of destroying the insects are the "digging out" method or the gathering of the cocoons. Several other schemes have been tried,

but have been found impractical, e. g., the "freezing" method, bisulphide of carbon and boiling water or similar applications.

After four years of experimental work the Cornell station came to the conclusion that the peach tree borer is one of the most difficult insects to control. Many mechanical devices and washes were used. Some injured the trees, others were ineffectual and a few were effective to a certain degree.

The "digging out" should be done twice a year, in September and June. The work done in September will destroy a large number of the small larvae, but

on account of their size some will be missed. These may be successfully found the following June, when they have obtained greater growth, and if removed at this time will prevent the production of the moths and a new infection for the following year.

Those substances which killed the trees and classed as dangerous were: Paris green and glue, raupenleim, dendrolene, white paint, white paint and paris green, printer's ink.

Those found to be practically ineffectual or useless were: Wire cages, carbon bisulphide, asafetida and aloes, lime, salt and sulphur, resin wash, hard soap, tallow, tansy, whale-oil soap, whitewash, lime and linseed oil, hydraulic cement wash, pine tar, Hale's wash (one application).

Those which kept out over one-half of the borers were: Hale's wash (two applications) kept out one-third to one-half, mounding kept out one-half to seven-tenths, tarred paper kept out one-half to seven-eighths, and tobacco stems kept out two-thirds to five-sixths.

Gas tar proved to be the best application tested by the Cornell station. It was used freely on the same trees for three successive years without the slightest injury to the trees, and it kept out from four-fifths to all of the borers. Trees should become thoroughly established and get a year's growth, then there will be very little danger from its use. It is believed that the gas tar, which is a by-product of the gas plants, will prove equally effective whether the borers are dug out or not.

The peach tree borer is perhaps the most destructive enemy of the peach, and it is evident that no one method will give complete freedom from it. Mounding, paper wrapping, or the deterrent washes should, therefore, be combined with the "digging out" process, and if these are kept up as a regular yearly procedure this pest should be easily kept under control and the amount of labor entailed should steadily diminish.

In the course of investigations of the peach borer by the United States Bureau of Entomology in 1905 another borer was found infesting the peach, inhabiting principally the trunk, especially of old trees or those showing injury from freezing or other causes. This insect, to be known as the lesser peach borer, *Synanthedon pictipes* (G. and R.), causes much injury, feeding on the soft bark and excavating burrows after the manner of the true peach borer.

# The PACIFIC MONTHLY

has just closed the most successful and prosperous year in its history. We want to make 1911 even more successful than the year just passed. We want *your* name upon our subscription list. Here are a few facts which will help you to decide the question of subscribing,

¶ The Pacific Monthly is recognized as the most successful independent magazine in the West. It publishes each month artistic and unusual duotone illustrations of beautiful Western scenery, studies of Indian heads, or of animal life, ranging from Alaska, on the North, to Mexico on the South, and as far afield as Japan and the South Seas. From its striking cover design to the last page you will find a feast of beautiful pictures.

¶ Each month it publishes from five or six short stories by such authors as Jack London, Stewart Edward White, Harvey Wickham, D. E. Dermody, Seumas MacManus, Fred. R. Bechdolt, and other well known writers of short stories. Its stories are clean, wholesome and readable.

¶ Each month one or more strong articles are published by such writers as William Winter, the dean of dramatic critics, John Kenneth Turner, the author of "Barbarous Mexico", Rabbi Wise, the noted Jewish Rabbi, and John E. Lathrop, who contributes a non-partisan review of national affairs. Charles Erskine Scott Wood contributes each month under the title of "Impressions" a brilliant record of personal opinion.

¶ The Pacific Monthly has become noted for having published some of the best verse appearing in any of the magazines. Charles Badger Clark, Jr., contributes his inimitable cowboy poems exclusively to The Pacific Monthly. Berton Braley, George Sterling, Elizabeth Lambert Wood, Wm. Maxwell, and other well known poets are represented by their best work in our pages.

¶ A feature that has won many friends for The Pacific Monthly has been our descriptive and industrial articles. During the coming year one or more such articles will be published each month. Articles now scheduled for early publication are: "Money in Live Stock on the Pacific Coast", "Success with Apples", "Nut Culture in the Northwest", "Success with Small Fruits", "Fodder Crops in the Western States".

¶ In addition to these articles the Progress and Development Section will give each month authoritative information as to the resources and opportunities to be found in the West. To those who are planning to come West, the descriptive illustrated articles on various sections of the West will be invaluable.

¶ If you want a clean, fearless, independent magazine—one that will give you wholesome, readable stories, authoritative, descriptive articles of the progress being made in the West, a magazine that believes thoroughly in the West and the future destiny of the West—you will make no mistake in subscribing for the Pacific Monthly. Its subscription price is \$1.50 a year. To enable you to try it for shorter period, however, we will give a trial subscription of six months for \$.50.

¶ Fill out the coupon below and send it with \$.50 in stamps to The Pacific Monthly Company, Portland, Oregon.

THE PACIFIC MONTHLY COMPANY

Portland, Oregon

Gentlemen:—Enclosed find fifty cents in acceptance of your special offer of a trial subscription for six months.

Name .....

Address .....



BOSTON IVY COVERING FACTORY  
Portland Cordage Company, Thirteenth and Marshall Streets, Portland, Oregon

## PLANTING OF FLOWERS TO MATURE NEXT YEAR

BY DOROTHY, IN THE "COUNTRY GENTLEMAN"

**I**T is a mistake to suppose that gardening work belongs to spring in any exclusive sense. The owner (who is also the lover) of a garden knows well that this is a work for all times and seasons. When frost forbids digging we can still go on planning and forecasting. But, in early autumn digging is still in season, and there is much to be done in making a start on next year's flowers.

Most of our common garden flowers have now ripened the seeds of this year, and this is nature's intimation of the time of preparing for a succession. Many of them have already dropped the unnoticed product that will spring into a new life without thought or care on our part, if undisturbed. But that is far from being enough. We may accept a voluntary increase as a free bounty, but good gardening demands that we shall do our part intelligently.

Many biennials and perennials can be grown from seed sown now that will bloom next year, thus gaining a whole year over seed kept over and sown in the spring. The little seedlings will strike root deeply throughout the fall weather and start into growth very early next spring. This is also true of some of the best annuals that are hardy enough to bear the cold of winter. These will come into bloom early, and so help in a continuous show of color. This constant

succession of flowering, to keep up the effect, while varying its features throughout the season, seems to be more and more a study with gardeners. For this purpose good annuals are especially valuable for filling in dull or vacant spaces between the more permanent occupants of the beds. Perhaps this is one reason why fall planting of many seeds has become much more general.

Cool and moderately moist weather conditions, such as generally obtain in September, are the most favorable for germination of a large proportion of small seeds. The gay and fragile poppy, for instance, grows better when the seeds are sown at this time than it does at the ordinary date in May. This is true both of the gorgeous perennial poppy and of the annuals, like the exquisitely dainty Shirley variety. Hybrid Orientals can now be had in a variety of colors, and the best of these are among the most striking ornamentals for a mixed border, though care is necessary in choosing both the situation and their next neighbors. Annual poppies sown in September make a strong growth early in the spring, and flower earlier and more freely (on account of a more robust growth) than those sown in the spring.

Rules for gardening have so many exceptions that a wide margin of variation is commonly required if they are

adapted to actual practice. It is often advised to sow perennials "not later than the middle of August." Other good authorities recommend "all the summer months" for this work. In fact the seeds of many perennials are liable to be either very slow or very uncertain in germinating, and the chances of exactly the right weather conditions may bring good seedlings from the September sowing earlier than from a sowing made several weeks before. And it is not a rare case to have certain seeds remain dormant in the ground until the following season. Discouraging? By no means. The many delightful uncertainties only add to the interest of a garden. But these are some of the reasons for using every opportunity and making the most of the pleasant days for outdoor work that come in early autumn to do as much as we can for next year's flowers. Even the seeds that are too late for this year's start will usually make good plants in the spring by the time the ground is ready to work. I am surprised every year to see how many plants of pansies, candy-tuft and the like are up and growing from self-sown seed before one has felt that it was time to entrust anything to the chilly ground.

If one depends upon plants and not upon seeds this is one of the most important months for work in the garden. Setting and dividing perennials is done to great advantage in the fall. With some kinds it is in fact the only good time for the work. Peonies, for instance,



ROSES IN BLOOM, PORTLAND, OREGON

a class by themselves in the many splendid improved varieties now so popular, should always be planted in the fall—in September, if possible. They start into growth very early in spring, and one year's bloom is lost if they are moved then. Planted now, they become well rooted and ready for the season of new growth. The peony is, however, one of the flowering plants that most needs time for its best effect; it is shy of being disturbed and gains immensely as it becomes a strong clump, massive both in flower and foliage, and covered with buds and blossoms by the dozen. It is no longer the fashion to call the peony coarse. In fact not only the most delicate tints of soft color, but fine fragrance also is found in these richly solid and most effective flowers. Entirely hardy and free from insects and diseases, it is perhaps no wonder that they are often put forward now as rivals to the rose.

A common error in planting is to set the crown too deeply; two inches of cov-

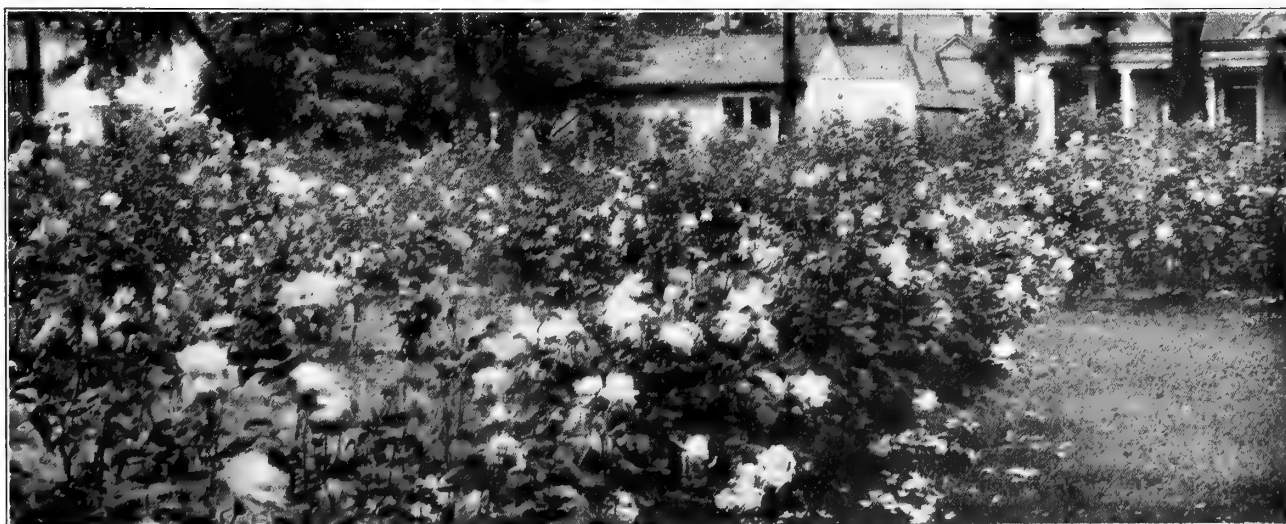
ering with soil is enough. Like the rose, the peony should be well fed; rich soil and abundant moisture are required for the best results.

Another favorite hardy perennial much recommended for fall planting is the iris. Both the German and the Japanese varieties may well be planted now, but in my own experience I have found the iris one of the most accommodating of plants in this respect, submitting cheerfully to removal at almost any time. If one has a pond or stream on the place it is a delightful plant for colonizing, growing and increasing without care in a moist situation. The German iris increases its root stocks rapidly, and in a mixed bed the more hardy and vigorous kinds are liable to take possession, to the detriment of the more delicate ones, so that choice sorts are apt to disappear unless given a separate location.

This is a favorable time for starting or transplanting woody vines, like the honeysuckle. The ease with which

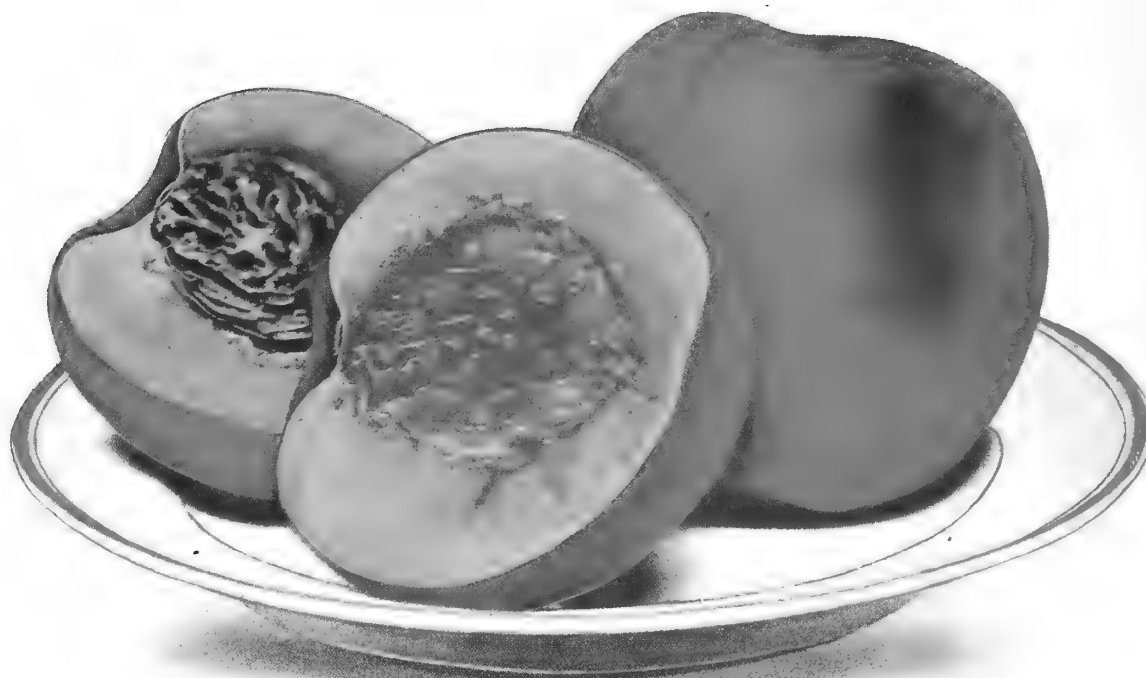
beauty and shade may be increased by starting screens and covers for fences and pergolas is not always recognized. Wherever such vines are growing vigorously (without too much interference) an abundance of rooted sections will usually be found at the base, each one of which, moderately cut back, will make a vigorous young plant in a new situation. Enlarging our own stock and sharing with friends and neighbors is one of the constant privileges of having a garden.

To mention the spring flowering bulbs is to mention one of the greatest and brightest opportunities for fall work in providing next year's flowers. But even to begin upon this subject would lengthen this article too much. And, then, October is the month for planting tulips and hyacinths in the open ground, though 'tis true that daffodils are thought to do better planted in September. They wake early to bring in the sweetness and charm of April.



"A YARD OF ROSES" IN PORTLAND, OREGON

# The New Peach THE GILLINGHAM



## The kind that is not attacked with Curl Leaf

This new and valuable peach originated in Salem, Oregon. The fruit is large, yellow-meated, of the Crawford family or type, fully equal if not superior to this favorite variety in flavor. It is a prolific fruiter and comes into bearing young, the original tree bearing its first fruit at three years from seed. This peach is one that deserves a place in every peach orchard, and on account of its high quality, early and prolific bearing tendencies, it is certain to be a profitable variety to the planter.

We have these trees only in a limited quantity, consequently if you desire to get some of these you should order early. Prices are reasonable, trees first-class and guaranteed true to name. Write for descriptive circular and have your trees reserved. Address all communications to the

## Oregon Nursery Company

ORENCO, OREGON

# A Wonderful New Cherry

# THE ROE

A full size illustration of this magnificent cherry, in natural colors, is being prepared, and will be printed in a future issue of "Better Fruit."

**A very late and delicious sweet cherry. Ripens six weeks later than the Royal Ann**

It has long been realized that if a cherry could be originated equal to the Royal Ann in size and quality, but ripening several weeks later, it would be an exceedingly valuable cherry to the fruit grower. Everyone has recognized the desirability of extending the cherry period. The Roe Cherry meets the demands of this condition.

The Roe Cherry bears many similarities of the Royal Ann and Centennial varieties, but is decidedly firmer in flesh than either of these. It has a decidedly fine flavor, is rich in sugar and very desirable to eat out of hand or for canning and preserving. We know of no other cherry like it on the market today. The Roe will outclass any cherry for shipping purposes there is now grown. You should include the Roe with your other planting—it will be the most valuable variety you can grow. For full particulars, prices, etc., write us.

## Oregon Nursery Company

ORENCO, OREGON





AMERICAN BEAUTY ROSES IN BLOOM, PORTLAND, OREGON

# Portland Rose Festival

TO BE HELD IN

Portland, Oregon, June 5 to 10, 1911

WILL BE A MOST BRILLIANT

## Floral Fiesta and Civic Jubilee

Portland, "The Rose City," will be a scene of splendor and the center of world-wide interest for one week

---

REDUCED FARES TO PORTLAND

FROM ALL POINTS ON THE

Oregon-Washington Railroad & Navigation Co.

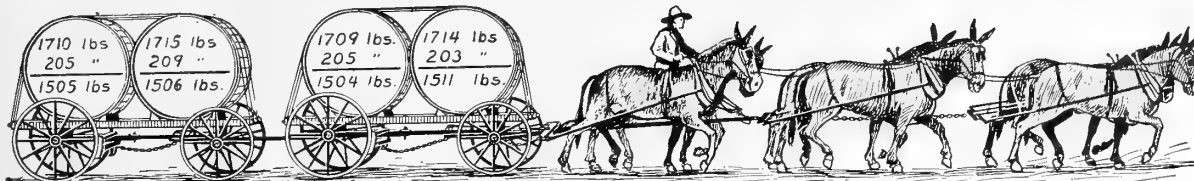
---

To keep perfectly posted on all important matters relating to this great event, call on local agents for circulars and printed matter, or write to

WM. McMURRAY, General Passenger Agent, Portland, Oregon

In the March "Better Fruit" we submitted you some of the "Expert Testimony" received; we now give you some practical illustrations of the further advantages of

# "BLACK LEAF 40"



1. The "old way": Hauling Tobacco Stems to the ranch, to make "Home-made" Extract. Total weight about 6,800 pounds.

**NICOTINE YIELD**, about 42 pounds. Sufficient to make 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." Under the "home-made" process, **no uniformity** could be counted upon.

2. "Progress": Hauling twenty-eight five-gallon cans of "Black Leaf" Tobacco Extract to the ranch.

3. "The Latest": Taking one case (ten tins) of "Black Leaf 40" to the ranch.



Total weight about 1,750 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**



Total weight about 160 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**

Owing to the large dilution, neither foliage nor fruit is stained.

Like our "Black Leaf" Extract, "Black Leaf 40" may be applied when trees are in full bloom and foliage, without damage to either. Also, "Black Leaf 40" is perfectly soluble in water—no clogging of nozzles.

**PRICE:** { 10 $\frac{1}{2}$ -lb. can, \$12.50, makes 1000 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
2 $\frac{1}{2}$ -lb. can, 3.25, makes 240 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
 $\frac{1}{2}$ -lb. can, .85, makes 47 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"

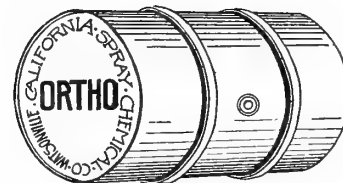
These prices prevail at **ALL** agencies in railroad towns throughout the United States. If you cannot thus obtain "Black Leaf 40," send us postoffice money order and we will ship you by express, prepaid.

**The Kentucky Tobacco Product Company (Incorporated), Louisville, Kentucky**



## \$250.00

### REWARD, IN GOLD COIN



The above reward is offered for competent proof that Ortho Lime-Sulphur Solution is even equaled or matched by the average output of any other lime-sulphur plant in the United States or Canada in the following points to-wit:

- First: The container;
- Second: The average strength;
- Third: The uniformity.

Ortho Lime-Sulphur Solution is sold in 55-gallon galvanized steel drums; tests always approximately 36 degrees Beaume, about 15 to 20 per cent stronger than any other average solution. The best is never too good. The first cost is no greater than that of the weakly made. The "Ortho Way" is the best. Special prices for the month of March.

## California Spray-Chemical Co.

WAREHOUSES IN PORTLAND AND SEATTLE

WATSONVILLE, CALIFORNIA

# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF  
THE NORTHWEST FRUIT GROWERS' ASSOCIATION  
A MONTHLY ILLUSTRATED MAGAZINE  
PUBLISHED IN THE INTEREST OF MODERN  
FRUIT GROWING AND MARKETING  
ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD  
EDITOR AND PUBLISHER

C. R. GREISEN, *Assistant Editor*

H. E. VAN DEMAN, *Contributing Editor*

STATE ASSOCIATE EDITORS

OREGON

A. B. CORDLEY, *Entomologist*, Corvallis

C. I. LEWIS, *Horticulturist*, Corvallis

P. J. O'GARA, *Pathologist and Entomologist*, Medford

WASHINGTON

W. S. THORNBUR, *Horticulturist*, Pullman

A. L. MELANDER, *Entomologist*, Pullman

COLORADO

C. P. GILLETTE, *Director and Entomologist*, Fort Collins

E. B. HOUSE, *Chief of Department of Civil and Irrigation Engineering*, State Agricultural College, Fort Collins

E. P. TAYLOR, *Horticulturist*, Grand Junction

IDAHO

W. H. WICKS, *Horticulturist*, Moscow

UTAH

DR. E. D. BALL, *Director and Entomologist*, Logan

LEON D. BATCHELOR, *Horticulturist*, Logan

MONTANA

O. B. WHIPPLE, *Horticulturist*, Bozeman

CALIFORNIA

C. W. WOODWORTH, *Entomologist*, Berkeley

W. H. VOLCK, *Entomologist*, Watsonville

BRITISH COLUMBIA

R. M. WINSLOW, *Provincial Horticulturist*, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR

IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,  
at the Post Office at Hood River, Oregon,  
under Act of Congress of March 3, 1879.

## THE FRUIT GROWERS' HOME.

Fruit growers are high-class, intelligent, educated people, consequently their desires are more or less similar to those of city people, and it is evident that there is a strong desire to make their environments as attractive as possible. Good schools are already established, good roads are being built, the orchard is set and now a movement for beautifying the home grounds is rapidly spreading.

"Better Fruit" was the first horticultural paper to take the initiative in this movement in a big, broad-minded way by publishing, in May, 1910, the first entire floral edition ever published by any fruit growers' paper. This edition was so popular that the demand, in a very short time, exhausted the large number of extra copies which had been printed. So, again, we produce in this number a floral edition, furnishing the fruit grower with good articles on the growing of all kinds of flowers, with splendid articles about the best varieties to be planted. The edition speaks for itself, and it hardly seems necessary to comment further editorially upon it than to say that "Better Fruit" hopes the day will come when every fruit grower will surround his house with flowers, shrubbery and a lawn, and have his home as beautiful as that of any of our city friends.

Just a word more. A few dollars and a few hours' work will accomplish wonders, and remember—it is the home beau-

tiful, the home attractive that will keep the young people at home on the farm and make your life pleasanter and much happier.

◆ ◆ ◆

**PRUNE PRICES.**—The San Francisco Chronicle comments editorially upon the prices for prunes during 1910, stating that the State Board of Control of Iowa said that the inmates of the state institutions must be deprived of the joy of consuming the California prune during the next six months for the reason that the price is twelve and one-half cents per pound. Consumers in California are paying this figure. Growers who retained their last year's crop are getting eight to nine cents; the processing and packing must be added to this figure, and the profit for the retailer, also the freight, before the price is made to the consumer, therefore it would seem that the price of twelve and one-half cents is very reasonable in Iowa. The bulk of the crop last year was sold by the grower at from four and one-half to five cents. Apparently the prune supply is not equal to the demand, and the condition of the market indicates that the prune industry looks prosperous for the coming years, and that with 1910 cleaned up, 1911 prices ought to be very satisfactory to the grower.

Ottawa, April 3, 1911.

Editor "Better Fruit":

I must write you my appreciation of "Better Fruit." It is without a peer as to contents and makeup. I want to know if you have any back numbers available, as I consider they are an acquisition to any fruit grower's library. I did not receive the January number, but February arrived, and was the means of getting you two new subscribers. Professor W. Saxby Blair of McDonald Agricultural College made the statement in open class that "Better Fruit" was the best magazine published. Faithfully yours,

P. AITCHISON.

## SELLING THE FRUIT CROP.

Never before in the history of the fruit industry of the Northwest has the interest been so keen or so general about plans for disposing of the fruit crop as during the last few months. In previous years the crop has been much smaller, and not only readily, but quickly and satisfactorily disposed of. In 1910 the crop was larger than in previous years, and the increase demanded a wider distribution. This, however, was not fully realized until so late in the season that the growers were unable to organize properly and put into effect a selling force or system sufficient to adequately distribute the crop.

A large crop coming during 1910, when, as everyone knows, financial conditions were by no means at their best, made matters all the more difficult. The fact that the financial depression was anticipated caused this depression to be all the worse. The political situation

and the trust agitations were causes that tended to keep capital out of new investments and exploitation work. While the financial conditions during the past year have never been viewed as being critical, everyone realized that money was very tight. It is generally understood, and believed, that financial conditions will improve very materially in the year 1911, and it is now considered that the business of the country is prosperous and that there is no need for uneasiness, yet a feeling of conservatism must naturally be expected to prevail.

We cannot help but feel that financial conditions are largely accountable for last year's prices being somewhat lower than in previous years. However, the prices, in a measure, are also due to lack of proper distribution; better prices would have been realized if large markets had not been supplied so heavily. It is a well known fact that a number of large cities, which should have paid good, fair prices, either received no shipments from the Northwest or only a moderate supply, not equal to the actual demand. It is this that is causing fruit growers to think with a view to solving the problem of selling.

Early in the year—in January—a meeting was held in Portland, with representative delegates from different districts, to discuss the plan of forming a central selling agency for Oregon, Washington and Idaho. Later a meeting was held in Walla Walla, and a plan has been evolved, which is being submitted to the different districts for consideration. It remains to be seen what will be done. Much progress, however, has been made and a better understanding of the business has resulted, and in all sections activity prevails. Work has been done along the right lines for the betterment of the selling, and the fruit business in general.

Southern Oregon has formed a district organization composed of associations in each one of the shipping centers. This is certainly a step in the right direction. The Yakima Valley already has one association, and a district organization is being formed in other sections where the Yakima Horticultural Union has no membership. Wenatchee is active for district association to include Wenatchee, Chelan, Malaga, Peshastin, Leavenworth and other tributary and similar fruit growing sections in that district.

In April a meeting was held at Albany, Oregon, with a view to forming an Oregon selling agency to include the Willamette Valley, for the sections from Portland to Roseburg. Hood River has the oldest association, which has always been successful, and associations are already formed in the surrounding territory—Mosier, White Salmon and Underwood. It is evident that the association idea is progressing rapidly, and the district association plan is also meeting with success in different districts, and the indications are that in coming years there will be very few growers shipping independently; it is apparent that business will either be done through associations, district associations or a central selling

Continued on page 55.

# Land Bargains

In the Famous  
White Salmon Country

A partial list of bargains for sale by

## R. FIELD & CO.

WHITE SALMON, WASH.

An ideal fruit belt, mild climate and wonderful scenery; pure water and fuel in abundance; a productive and inexhaustible soil, assuring large and unfailing crops; a ready market, with the best transportation facilities.

You will have to act quickly if you want any of these, because land in this famous country is rapidly increasing in value. We have sold many tracts of land in the last three years, and those who bought from us are well pleased. We can refer you to them. We also have bargains in city property and are daily listing other outside tracts, which we will be glad to show you. We guarantee every tract as good as represented.

Following are only a small portion of the lands we have on our list:

300—80 acres 9 miles out; good apple land; 60 acres mostly level, 20 acres rolling, 3 acres cleared; 125 fruit trees set out; fine creek running through the place. Price \$6,000; half cash.

301—30 acres 1 mile from town; 20 acres cleared, 15 acres in 3-year-old fruit trees, 1½ acres in strawberries; running water on this place; on the main road; will make one of the finest homes; close to town; will increase in value every year. Price \$18,000; half cash, rest to suit.

302—160 acres 10 miles out; rich soil; 4 acres in trees just beginning to bear; about 100 acres tillable land, rest rolling, with fine fir timber on it. A cheap place at \$5,000; terms given.

303—2½ acres, all in fruit trees, mostly bearing; joining town. Price \$2,500, on easy terms.

304—160 acres at Gilmer; rich red shot soil, small house, small clearing; mostly covered with fine saw timber, which will help pay for clearing; good place to divide into small tracts. This can be had for \$5,000 and can get 160 joining for same price. If wanted, this is a fine proposition.

305—80 acres 9 miles out; about 50 acres can be set to fruit trees, rest is hillside pasture. Land can be bought at \$50 per acre; \$2,700 cash, rest time.

306—160 acres in Snowden country; is all good land, covered with pine and fir timber; small house. Price \$40 per acre.

307—A nice 160 acres at Trout Lake, unimproved; some fine timber on it, also a running creek. Price \$20 per acre; easy terms.

308—Nice level town lots with bearing fruit trees on them; 300 to 400 big lots; nice corner lot in Overlander Addition for \$250, on easy payment plan; also some fine houses for sale at bargains.

309—10 acres 1 mile out, unimproved; is nice level land; has some rock on it, but they can be taken off; would make a nice place for chickens and fruit combined. Price \$1,500.

410—5 acres just outside of city limits, half mile from business center of city; 3 acres in cultivation and mostly set out to commercial orchard 3 and 4 years old, beginning to bear; all good land, with a fine view of the Columbia River and Hood River Valley; fine home and money-maker. Price for a short time, \$2,500; terms given.

311—80 acres irrigated land in Twin Falls country, Idaho, all cleared; been in crops 2 years; to trade for unimproved land in White Salmon Valley.

312—20 acres 8 miles out; rich red shot soil; 4 acres in Spitzenberg and Delicious apple trees 2 years old; no rocks and no waste land; a fine tract, sloping gently to the east; about 10 acres slashed and burned; some timber; in the great development section. Cheap at \$3,500.

313—60 acres 12 miles from White Salmon; all good land; about 10 acres in cultivation; a few fruit trees and small house; is moistened by spring; rest of land is easily cleared. Terms, \$2,000 cash, \$1,000 on time to suit.

314—5 acres in a high state of cultivation, 2 miles from town; fine 9-room house; the land is all set to trees 2 and 3 years old, and strawberries between the trees, which on an acre clears up \$150 to \$200 each year. This is a money-maker from the start and will increase every year. Price \$6,500; half cash, rest 3 years time.

315—40 acres close to Snowden, unimproved; the land is half good tillable and half rough, with fine saw timber on it. Can be had for \$1,000; terms, \$600 cash.

316—9 acres 2 miles from town; 8 acres in cultivation and 6 acres set to trees partly in bearing, also loganberries and raspberries, 4 acres in strawberries; this is very early and first berries ripe in locality; small house and barn. Price \$9,000; half cash.

317—30 acres 8 miles from station, unimproved; 20 acres timber, rest in brush land and easy clearing; two fine springs of water on this place. Price \$100 per acre; terms given; half cash.

318—6½ acres, unimproved, 1½ miles from town; well located, fine fruit land; wood on this place will help clear same; right on main road. Price \$250 per acre; half cash, rest to suit.

319—40 acres near Robertville; all good land, unimproved; a fine piece of land to put in apples; land around this place is rapidly increasing in value. Price \$35 per acre; terms.

320—20 acres 1 mile from town; about 15 acres good land, rest rough; red shot soil; has a west slope; would be a nice chicken ranch. This is a great snap at \$125 per acre; terms, half cash.

321—10 acres half mile from town of White Salmon; all good land; 7 acres in high state of cultivation, mostly out to good commercial orchard, filled in with peaches, pears and cherries; half of orchard in bearing this year, rest are 2 and 3 years old; 1 acre strawberries in full bearing; good new 8-room house, small barn and outbuildings; tools and implements go with the place. Price \$5,200; terms.

322—26 acres, all good land; 10 acres slashed and burned, light clearing; the rest is brush land easy to clear. This is a tract of land we can recommend to be first class. Price \$100 per acre; terms.

323—40 acres 3 miles north of White Salmon, unimproved, with fine timber, willow and hazel brush growing on it; some is rolling, some level. This can be had by paying only \$1,000 down, and rest good terms.

324—20 acres 9 miles out, in the apple belt; fine red shot soil; some good fir timber. A bargain at \$2,000; terms.

325—40 acres in the apple belt, in a high state of cultivation; all set to trees; one of the best 40-acre tracts anywhere in the country; very rich soil; keeps plenty of moisture during summer; about 15 acres in 3-year-old orchard and 25 acres in 1-year-olds. Price \$24,000; good terms given.

326—80 acres 4 miles out, in choice apple belt; all unimproved, but easily cleared; mostly all level. Price \$100 per acre; terms.

327—40 acres 3½ miles out; 35 acres level, 5 acres rolling; good rich soil, well watered by springs; about 15 acres out to young orchard; a good house of 5 rooms, barn 30x40, and outbuildings. Price \$7,000; two-thirds cash.

328—160 acres 7 miles out, in good location; 110 acres tillable land, rest pasture land; red shot soil; very fine apple land; has about 5 acres in 3-year-old fruit trees; fine spring of water; small house. A good buy at \$12,000; terms.

329—120 acres 3 miles out; small house and barn; 2 acres cleared and set to young trees, 10 acres more slashed and burned; the land is rolling, but well located. Price \$50 per acre; terms.

We shall be glad to give you any further information you may desire. Being well acquainted with the possibilities and resources of the valley, we are in a position to give our customers the best service possible, and gladly make arrangements to show intending settlers the country, if they let us know when they are coming. We respectfully solicit your patronage.

## R. FIELD & CO.

MAIN STREET WHITE SALMON

Reference: White Salmon Valley Bank

# HOOD RIVER

## Makes New High Records

- 1** In competition with twenty-two cars from Northwest Apple Districts. Won Sweepstakes and \$1000 cash prize.
- 2** In competition with four cars Spitzenbergs. Won Best carload of Spitzenbergs and \$250 cash prize.
- 3** In competition with four cars from Northwest Apple Districts. Won Best carload Newtowns and \$250 cash prize.
- 4** Won Association of Chamber of Commerce of Chicago, \$500 Silver Cup for Best Packed Car.
- 5** At Portland, in competition with State of Oregon, Hood River won nearly every entry in one, two, three order.

This only proves our claim of ten years standing—HOOD RIVER is the quality fruit district—the ideal location for *you*

FOR FURTHER INFORMATION WRITE THE

**Secretary, Hood River Commercial Club, Hood River, Oregon**



Continued from page 52,  
agency on a large scale, and what is not moved through these channels will be moved through incorporated selling agencies or incorporated fruit buying concerns. Which of all these plans will prove the most effective and satisfactory is a difficult matter to prophesy. Theoretical plans will have to be tried in a practical way before they can be accepted as being successful.

There are so many energetic, able fruit growers working earnestly to solve the problem that it is safe to venture that marketing conditions will be materially improved in every way during the coming year.

While a great many have looked to see "Better Fruit" advise the fruit growers what to do, it must be remembered that the editor is just a human being—not a prophet—and recognizing that there are just as smart, and many smarter, men than he engaged in trying

### WHOLE ROOT TREES

Are the only kind to set. Now is the time to make arrangements for your next fall's requirements. We have a large, full line, and ask that you correspond with us.

CARLTON NURSERY CO.  
CARLTON, OREGON

GET CATALOG AND PRICE LIST  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlemier

Grower of Choice

NURSERY STOCK

F. W. SETTLEMIER

Woodburn, Oregon



### CAMPBELL SUB-SURFACE PACKERS

We are the sole manufacturers of this famous Sub-Surface Packer, the only one made.

This is the one that you have heard everyone talking about.



Send for our Special Pamphlet on Sub-Surface Packing, the best known system for "dry farming," a method of absolutely insuring bumper crops with a minimum rainfall—the salvation of semi-arid regions.

Made in Three Sizes, with 10, 16 and 24 wheels, is heavy and strong, and the frame is made to carry all the extra weight required. Write for Catalog No. V

**Parlin & Orendorff Co.,**  
CANTON, ILL.

to solve this problem, he cannot help but feel that it would be presuming on his part to give advice to those who are just as well informed as he is.

In conclusion, it would take nothing short of a prophet to see the way clear to point out a course that would not have more or less stumbling blocks, and it seems that the solution must come as a matter of evolution from all of the different districts rather than through some individual pointing out the way.

◆ ◆ ◆  
**THE YELLOW NEWTOWN PIPPIN.**—For eight years we have been told that the people of the United States were not buyers of Newtown Pippins. We were told that the English market was practically the only market, and up to the present year England has consumed the greater part of the Newtowns from the United States at satisfactory prices. However, this year the English market has been somewhat slow, and prices not so good as usual. The consequence has been that growers of Newtowns have been investigating the United States as a market for Newtowns. Notwithstanding the fact that a great many fruit dealers did not know a Newtown when they saw one, and notwithstanding the fact that nearly every fruit dealer said that there was no demand for the Newtown in his section, the contrary has been well proved this year. Many cars have been marketed in various parts of the United States, and choice Newtowns

## Pleased As Usual

We are receiving many gratifying reports from our spring deliveries, which goes to show that our trees are proving what we claimed for them.

You realize, of course, that if we did not set out to give satisfaction, we could not long continue in business. You must be pleased with our treatment or we both lose money.

A good many who waited until late before ordering were disappointed, however, for owing to the great demand we were out of many varieties. It's the same old story every year. Always a lot who wait until just before shipping time to order, and then have to take what is left, whereas had they ordered early they could have gotten what they wanted.

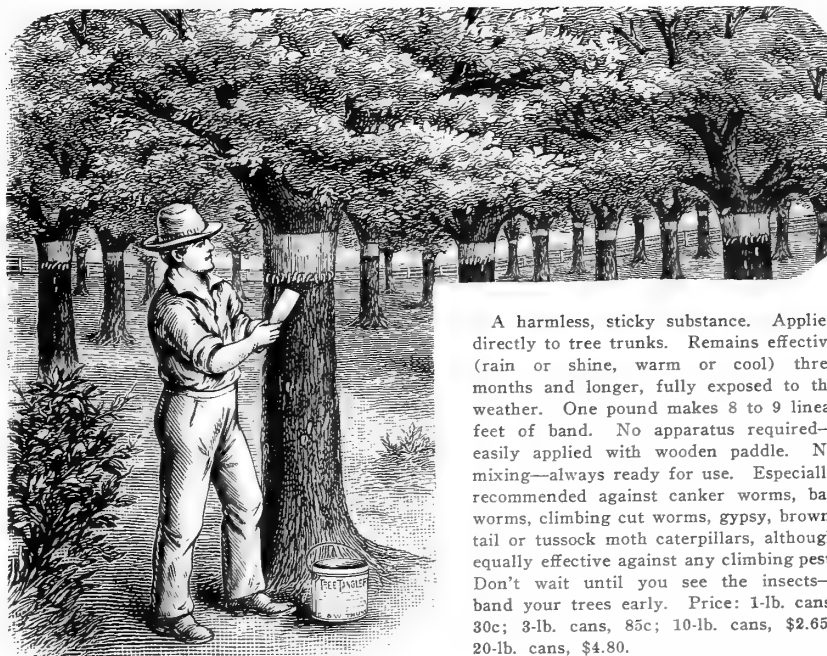
Let us send you our new catalog, which will be off the press about May 15th. It's a beauty and we want you to have it. It will be sent you for the asking.

**Yakima Valley  
Nursery Company**

Toppenish, Washington

More salesmen wanted.

## BAND YOUR TREES WITH TREE TANGLEFOOT



A harmless, sticky substance. Applied directly to tree trunks. Remains effective (rain or shine, warm or cool) three months and longer, fully exposed to the weather. One pound makes 8 to 9 lineal feet of band. No apparatus required—easily applied with wooden paddle. No mixing—always ready for use. Especially recommended against canker worms, bag worms, climbing cut worms, gypsy, brown-tail or tussock moth caterpillars, although equally effective against any climbing pest. Don't wait until you see the insects—band your trees early. Price: 1-lb. cans, 30c; 3-lb. cans, 85c; 10-lb. cans, \$2.65; 20-lb. cans, \$4.80.

SEND FOR BOOKLET

**The O. & W. Thum Company** GRAND RAPIDS  
MICHIGAN

Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot

THE SIMPLEST, EASIEST AND  
MOST PERFECT

# Picking Bucket

ON THE MARKET

Every piece of fruit that is picked without bruising is  
*money in your pocket. A day's picking will pay for it.*

PRICE, \$1.50



AGENTS WANTED AT ONCE

WRITE

## Palmer Bucket Co.

HOOD RIVER, OREGON

P. S. — Tomatoes, cherries, grapes and all tender fruit can be emptied from this bucket without a bruise.

by carloads have been readily sold at \$1.50 per box net, f. o. b. shipping station, which was a better price than was obtained on the English market during a good part of the season to date.

♦ ♦ ♦

**SEASONS OF HIGH-CLASS APPLES.**—While there are many varieties of quality apples—hundreds of them—there are few that are universally known in a large commercial way. Each variety of apple should be marketed in its season, and it should be the endeavor of growers and dealers to clean out one variety in its season to make room for the next kind.

The Gravenstein is the first fall apple of high-class quality—a splendid apple. This is followed by the Jonathan, and during its season there is nothing better. The next varieties of apple that are ready for consumption are the Spitzenberg and Ortley, which generally are placed on the market in the latter part of November, during December and extending into January; then follows the Rome Beauty, and for the latter part of the apple consuming season—that is, during December, January, February, March and April—there are two varieties that for quality and keep are unequalled, the Winesaps and Newtowns.

In a few years the belief will more than be justified that good prices will prevail for these varieties under normal financial conditions, especially if growers so systematize the selling end of their business as to create a thorough and proper plan for selling and distributing

the different varieties during the proper time of the year for each.

♦ ♦ ♦

Editor Better Fruit:

Enclosed find one dollar to cover subscription another year. Your paper is a dandy, and I would not miss a single number. Yours truly, Oscar Reinhardt, Brewster, Washington.

SPRAY COMPLYING WITH THE INSECTICIDE ACT OF 1910  
IT WILL PAY YOU TO USE EITHER

**ARSENATE OF LEAD**  
PASTE OR POWDERED  
FOR ALL LEAF EATING INSECTS  
RESPONSIBLE DISTRIBUTORS AND AGENTS WANTED

**KEY BRAND**  
RIGHT PRICE AND MATERIAL  
FUNGICIDE AND INSECTICIDE  
USE

**BORDO LEAD**

INTERSTATE CHEMICAL CO.  
11 BAYVIEW AVE., JERSEY CITY, N.J.  
WRITE FOR PRICES, CIRCULARS ETC. CORRESPONDENCE SOLICITED.

BALFOUR, GUTHRIE & CO.  
Distributors for Oregon

**PORTLAND WHOLESALE  
NURSERY COMPANY**

Rooms 1 and 2 Lambert-Sargeant Building  
Corner East Alder Street and Grand Avenue  
PORTLAND, OREGON

**THINGS WE ARE  
AGENTS FOR**

KNOX HATS

ALFRED BENJAMIN & CO.'S  
CLOTHING

DR. JAEGER UNDERWEAR

DR. DEIMEL LINEN MESH  
UNDERWEAR

DENT'S and FOWNES' GLOVES

Buffum & Pendleton

311 Morrison St., Portland, Oregon

**RICHLAND NURSERY**

Richland, Washington

**FRUIT TREES**

Complete stock of leading varieties of  
Apples, Pears, etc.

WRITE US FOR PRICE LIST

**NURSERY CATALOG**

*New, handsome, instructive, up-to-date, describing*

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

*Free on request. Write now, mentioning this paper.*

**J. B. PILKINGTON, Nurseryman, Portland, Oregon**

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

**Car Lots Our Specialty****John B. Cancelmo**127 DOCK STREET  
PHILADELPHIA**FANCY BOX APPLES****NEW POULTRY BOOK  
Just Out**

Conkey's new, big, 80-page illustrated guide for beginners, and reference for experienced poultrymen. Up-to-date housing methods, feeding, hatching, saving the chicks; how to prevent and treat disease. Chickens, turkeys, ducks, geese. There's a copy for you for the asking. Send name, also name of nearest poultry supply dealer, and 4c (stamps) for postage.

THE G. E. CONKEY COMPANY  
56 Commercial Bldg. (45) Cleveland, Ohio**STORAGE**Ship your Furniture to us  
to be stored  
until you are located**Transfer & Livery Co.**

Hood River, Oregon

WE regret to receive complaints from spray manufacturers in reference to analyses that have been published at various times by competitive firms. Competitive tests are not always definite because conditions are not always similar. Comparative analyses are not always absolutely significant because the specimens submitted for one cause or another may not be a fair average specimen. We publish elsewhere in this edition a complaint from Sherwin-Williams, stating that an analysis was made with spray which had simply been put out in small quantities for experimental work, and this specimen was not put out for general use.

**GREEN APHIS.**—For several years in the past green aphis has been a very serious pest. While not an easy bug to control nevertheless it can be controlled by effective work if the right kind of spray is used. The average reason for green aphis getting a start is because the grower does not begin to spray until they have infested the entire orchard. The orchard should be watched very carefully during the spring and summer months, and whenever the aphids begins to appear continued spraying

should be kept up as long as aphids are in evidence. The best way, when they first appear on young trees, is to dip the twigs in a bucket of spray if the twigs will easily bend. In a young orchard the spraying can be done effectively with a hand sprayer, but in an old orchard it is necessary to get out the spray outfit. If the spraying is not promptly done the aphids will curl up the leaves and it is impossible to do effective work. While several remedies have been used, there is nothing more effective than Kentucky Tobacco Dip, made by the Kentucky Tobacco Product Co. Another cause for lack of control of this pest is that insufficient supplies are usually carried in stock by dealers—the grower trusts to getting the Tobacco Dip when he needs it. Every grower should provide himself early in the season with a sufficient quantity to spray thoroughly and carry such an amount on hand.

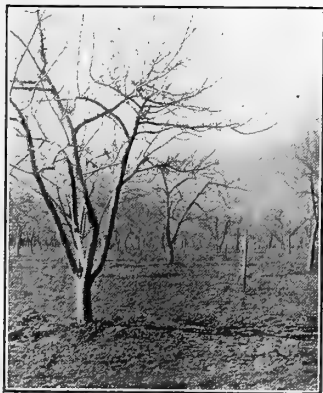
**ELSEWHERE** in this edition appears the article "The Package Sells the Goods." Every fruit grower is urged to read this article thoroughly, and we do not hesitate to urge every grower to try the experiment by putting some of his fruit in these packages during the coming season.

**Lime-Sulphur Hydrometer**Shows proper strength for  
Spraying Trees

By mail, with test jar and instructions, \$1.00. Agents wanted everywhere.



CARBONDALE INSTRUMENT CO., Carbondale, Pennsylvania

**Rogue River Valley**

Best medium climate in the United States.

Do you want a small bearing orchard, or young commercial orchard tract?

Very best bottom soil, with irrigation.

Close to Applegate River. Good boating and fishing.

Across road from store, post office, and station on new Grants Pass and Rogue River Railway. Six miles from Grants Pass. Excellent county road.

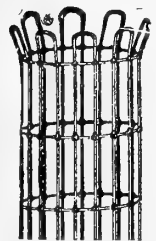
This cut shows part of bearing orchard, in winter.

Condition excellent. Price and terms right.

For full information about this and other tracts, write or call on

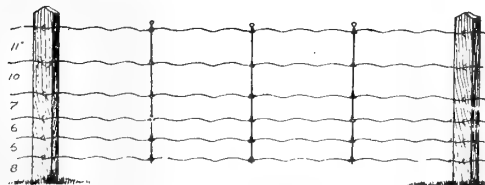
**A. N. PARSONS, Grants Pass, Oregon**

Reference by permission: First National Bank, Grants Pass Banking and Trust Co.

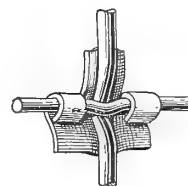
**RABBIT  
TREE  
GUARD**

These guards are made of No. 8 galvanized wire. Stay wires 2 inches apart and 18 long. Cost

25c each. Larger sizes to order. Guard will fit any tree up to 10 inches in diameter. To hold the guard in position, press the stay wire 6 inches into the ground.

**ANCHOR FENCE**

is built up complete, on the ground, of coil spring wire. Draw in one wire at a time and as many as required; after which bind on the stays of No. 8 wire with the Anchor Clamp. We loan or sell the tools.

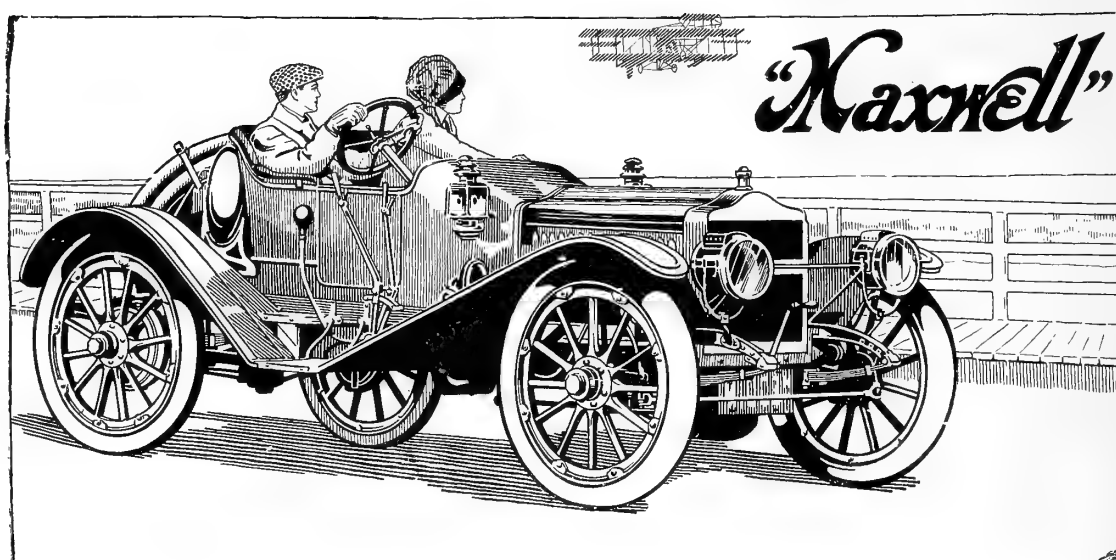
**Anchor  
Clamp**It never slips  
after closing**Anchor Fence Manufacturing and Construction Works**

37 Union Avenue, corner East Pine Street, PORTLAND, OREGON

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

# THE ECONOMY CAR

Perfectly Simple and  
Simply Perfect



4 Models, 16 to 30 H. P.

8 Body Styles

Prices, \$600 to \$1,400

F. O. B. Factory

# EVERYTHING FOR THE CAR



Firestone and  
Hartford Tires

Tip-Top Motor Car Co.

HOOD RIVER, OREGON



# THE HARDY NARCISSI FOR OUTDOOR PLANTING

BY ARTHUR BOWMAN, WITH PORTLAND SEED COMPANY

**A** PLANTING PLAN for beautifying the home is incomplete without "daffodils." The purity and beauty of their coloring and their graceful elegance of form stamp them as true

Since that time much has been accomplished, and a brief story of their advancement, together with notes on popular types and their culture, may create an interest that will lead to a

species, that he became convinced of the possibility of many of them being hybrids. To demonstrate this he crossed the trumpet with the poeticus types, and the seedlings showed a composite of both parents.

The announcement of these results in the early forties created a profound sensation, many enthusiasts taking up the work of development, among whom the names of two men and the results of their labors stand forth prominently, one of whom was Edward Leeds, a stock broker of Manchester, England, the other, William Backhouse, a banker of Darlington. Both developed large and distinctive collections, which were eventually secured by Peter Barr. They were the only collections of seedling daffodils in the world, which, added to Mr. Barr's own list, on which he had been working for some ten years, gave him the complete collection of all varieties in cultivation. This was in the seventies. For ten more years the work of gathering material, straightening out the family, grouping and naming varieties proceeded steadily, and when his labors were completed in the early eighties the collection represented some five hundred distinct varieties, including many new sorts, and commanded the attention of the Royal Horticultural Society of Great Britain, which, in the spring of 1884, sent a deputation



classics among flowers—real masterpieces of nature—aided in their development by the guiding hand and loving care of a master mind; for to their present popularity and perfection the world owes much to Peter Barr, "the father of the daffodil."

As long ago as 1629 Parkinson, a London apothecary, published his book, "A Garden of Beautiful Flowers," in which he listed ninety-six varieties of daffodils, and expressed regret that no two authorities agreed as to their classification.

closer acquaintance and greater appreciation of these most charming of all spring flowers.

From the beginning of the seventeenth century until the early part of the nineteenth no important advancement was recorded. About this time a group of London amateurs collected and grew all the varieties obtainable. Dean Herbert's book on "The Amaryllidae" then made its appearance, and it was during his study of the daffodil family, analyzing what had before been considered as



A PRODUCING ORCHARD AT OPPORTUNITY, WASHINGTON

## Why Experiment

With projects which have been tried and found wanting? "OPPORTUNITY," in the far-famed Spokane Valley, has passed the experimental stage, as every foot of our soil is capable of cultivation, and is producing the highest grade of fruits, which because of their superior quality command highest market prices.

It has not only proven itself one of the finest orchard projects in the Northwest, but is the ideal place for the home-builder. Its proximity to the city of Spokane, three miles distant, splendid market facilities, steam and electric lines, churches, schools, electric lights, telephone service, water under pressure for domestic use, and the irrigation water carried to highest point on each tract, gives the purchaser all the conveniences of the city and the comforts of the country.

## Our Guarantee to Investors

If you have not the time or inclination to develop and plant an orchard yourself, we will have our expert horticulturist plant an orchard for you to the best varieties of fruit, taking entire charge of it until it comes into bearing, and then turn it over—an orchard which is an income bringer from the start.

If at the expiration of four years you are not satisfied with your investment, WE WILL REFUND YOUR MONEY WITH SIX PER CENT INTEREST. This eliminates all financial risk on your part and makes your investment absolutely secure.

This proposition will bear rigid investigation. Our guarantee is absolutely good, as we are financially responsible, and can carry out all our plans for planting this land to orchards.

References: Old National Bank and Traders National Bank, Spokane, Washington.

## Modern Irrigation and Land Company

P. A. SUMMERLAND, General Sales Agent

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet on Opportunity.

Name .....

Address .....

## White Salmon Orchard Lands—Special This Month

709—20 acres  $2\frac{1}{2}$  miles from White Salmon; 12 acres in year-old Spitzenberg and Yellow Newtown apples; 3 acres in strawberries planted between the apple trees; house, barn and good well; fine view of Mount Hood and the Columbia River. Price this month, only \$6,500; \$2,500 cash, balance 5 years at 8 per cent, or 5 per cent discount for all cash.

712—80 acres 7 miles north of White Salmon,  $3\frac{1}{2}$  miles of White Salmon River. A snap at only \$3,000; \$1,000 cash, balance 5 years, 8 per cent.

715—80 acres  $9\frac{1}{2}$  miles from White Salmon,  $\frac{1}{2}$  mile of White Salmon River,  $1\frac{1}{2}$  miles of Husum. Only \$50 per acre; half cash, balance 5 years, 8 per cent.

716—80 acres joining the above, forming a square 160 acres, at same price and terms.

For Bargains in Raw or Improved  
Orchard Lands, Address

**H. W. DAY REALTY CO.** White Salmon, Washington

(Successors to White Salmon Realty Co.)



FIGARO  
SIR WATKIN  
CYNOSURE

BI-COLOR  
EMPRESS

Incomparabilis Types

to arrange for an exhibition. From that moment the future of the daffodil was assured, and this popular favorite has since held its own as the most fashionable spring flower, its production and sale developing into one of the important industries of the British Isles and Holland. The entire world pays homage to the daffodil, and even in far away Australia the Melbourne Daffodil Show lasts for three days each season. Coming in endless variety, adapting themselves to every planting condition or requirement, their stately and delicate beauty, exquisite perfume, earliness, free blooming and keeping qualities endear them to all who have grown them. Once planted in the field or garden they need no further attention, but will thrive and

perpetuate themselves, increasing in beauty for years.

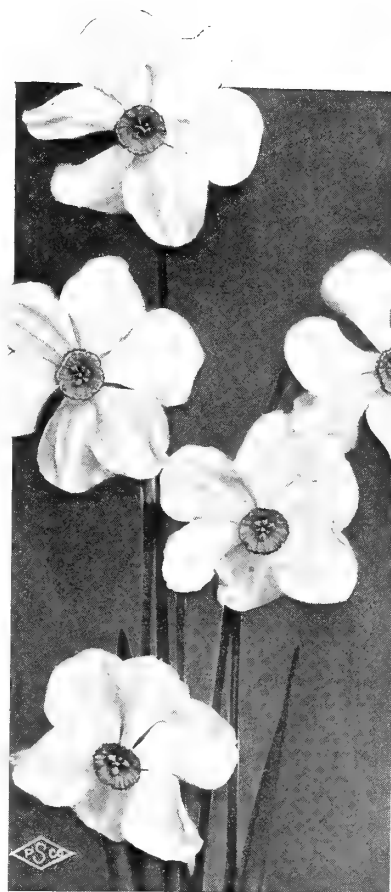
As there is sometimes a little confusion as to the difference between narcissi and daffodils it will be in order to explain that all of the trumpet types of narcissi, of which there are three main groups, are known as "daffodils." The first group is the large trumpet type. The narcissus poeticus crossed with the large trumpet daffodils has given us the hybrids, such as the "chalice cupped" or star shaped daffodils, the Incomparabilis, Barrii and Leedsii types. These are of the second group, distinguished by the length of the cup, which is from a third to three-fourths the length of the perianth or petals. The third group has the cup less than one-fourth the length of the perianth—the best known examples being the poeticus types.

The large trumpet daffodils are the most popular, as they are the best known, and some of the finest garden varieties are of this class. They also force easily, making ideal pot plants.

Of the earliest large yellow single trumpet daffodils that can be grown in beds or naturalized, Golden Spur, Henry Irving and the Tenby daffodil, Obval-laris, are all splendid, graceful flowers, free blooming and distinctive. Follow-



LEEDSII TYPE  
MRS. LANGTRY



POETICUS

ing these come the fine old-fashioned double Von Sion, Telemonius Plenus, a grand free blooming, hardy variety that succeeds everywhere. The white Spanish daffodil, Albicans, and the Bicolor Victoria, with bright yellow trumpet, white perianth, a flower of great substance and delightful perfume, should follow the first flowers. After these Emperor, rich deep yellow, a magnificent large flower, and Bicolor Empress, with snowy perianth and yellow trumpet. All of these are inexpensive, easily obtainable and sure to give results, and when once planted need little or no attention, improving each year.

Two newer varieties of unusual merit are Madam de Graaf, a grand new white, and Glory of Leiden, a giant yellow of great beauty, of which the illustration at the head of this article is a photograph

of a five-inch pot of three bulbs. They are rather expensive as yet, but to anyone affording them they are well worth their cost.

The Chalice Cupped or Star Narcissi are the daintiest and most charming of all types. To this class belong the Incomparabilis, Barrii and Leedsii forms, all splendid garden varieties that also grow perfectly in pots.

The Giant Sir Watkin is one of the most popular, growing well under all conditions and naturalizing readily; has immense long stemmed flowers of a pleasing light yellow, large dark cup, tinted orange. Incomparabilis Simplex, Barrii Conspicuous, Queen of England, all are dainty and beautiful, grow well and are easily obtained. The Double Incomparabilis, or rose flowered types, Silver Phoenix, pale, creamy primrose, large and full, and the Orange Phoenix, double white with orange center, are sweet scented, very beautiful and attractive; medium early.

In planting daffodils shun symmetrical lines or formal designs. Large group-



NARCISSUS GRAND MONARQUE  
Polyanthus Type

ings of irregular outline give most satisfactory effects. In planting for naturalizing the popular way is to throw the bulbs over the ground by handfuls and plant them where they fall.

Daffodils should be planted in the early fall if possible, but plantings as late as Christmas will give excellent results. The depth to plant is about twice the depth of the bulb. This gives



a covering of two to four inches of soil. Any good garden soil which has not recently been manured will give satisfactory flowers, but a deep moist loam is best. If the ground is dry or sandy it should be dug deeply, well manured and an annual, such as potatoes, grown the year previous. If your soil is light and you do not want to take off a crop before planting, give a light dressing of lime to the surface and work in a layer of well rotted manure a foot below, so as to be out of reach of the bulbs. This layer is to hold the moisture, not as a fertilizer. The best fertilizer is ground bone. This can be used with safety. On poor sandy soil a little sulphate of potash, three-quarters of an ounce to the square yard, will improve the color of the flower and retain the moisture. The Poeticus varieties and the Double Von Sion, (Telemonius Plenus) prefer a moist location. The single trumpets and the yellow hybrids grow best on a moderately moist soil, while the white trumpet sorts and white hybrids succeed best on a cool, moderately dry soil.

Popular types of narcissi other than daffodils are the Polyanthus, or cluster flowered, of which the "Paper White" is the best known, growing in either water or soil, used extensively by florists. A number of fine Polyanthus varieties are obtainable for outdoor planting, such as the Grand Monarque, white with lemon cup; the Pearl, pure white; Soliel d'Or, rich yellow with orange cup.

The Poeticus, Pheasant's Eye and Ornatus, and the double Alba Plena Odorato are very desirable and distinctive, being among the most beautiful and lasting of narcissi. There is also the new type, a cross of the Poeticus and Polyanthus, known as the Poetaz Narcissi, a magnificent class, of which the varieties Elvira, a superb white flower with broad petals of great sub-

stance, yellow cup with scarlet edge, and the sulphur yellow Irene, of beautiful form with fluted petals, are the two best examples. The individual flowers approach the Poeticus in size and are borne in clusters. They are very vigorous and free blooming.

One bulb we should always grow is the Jonquil, single Campernelle, one of the most charming and sweet scented of the later bloomers, and is also one of the cheapest of bulbs, but, notwithstanding its cheapness, nothing is more beautiful or satisfactory.

There are many hundreds of narcissi and daffodils, but the varieties noted will give a sufficient and satisfactory assortment to choose from for a beginning, and the individual will soon select his favorites, and can then indulge without limitations other than his time and pocket-book.

The season for planting daffodils is from early fall until mid-winter, generally the earlier the better, and you should early secure catalogues from reliable firms, Western ones if you live in the West, and make your own selections, always remembering that expensive novelties are of more value to collectors, and that some varieties, being cheap, does not necessarily mean they are inferior. Therefore, content yourself with the better known dependable kinds. You will be encouraged by their success, and will learn to appreciate and care for them.

But for your own enlightenment and to make your flowers and garden more



DOUBLE  
VON LION

SINGLE  
GOLDEN SPUR

interesting and valuable, always plant named varieties, and mark them plainly; avoid mixtures and cheap collections. They are made to sell, not to grow, and are generally immature, inferior bulbs, dear at any price, no matter how attractive the offer.

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

**TRUE-TO-NAME NURSERY**

Phone 2002K

Hood River, Oregon

## HARVEY BOLSTER SPRINGS

Soon save their cost. Make every wagon a spring wagon, therefore fruit, vegetables, eggs, etc., bring more money. Ask for special proposition. Harvey Spring Co. 784 17th St., Racine, Wis.



# VALUABLE INFORMATION ON WASHINGTON TREES

BY PROFESSOR W. S. THORNER, AGRICULTURAL EXPERIMENT STATION, PULLMAN, WASHINGTON

**D**URING the past fifteen years the State Experiment Station tested a number of shade, forest and ornamental trees on the college campus and in the station forest plots. As a result of these investigations much valuable information relative to the behavior of these trees has been compiled. These results entirely disprove the theories and advice of many early settlers, who feel that it is useless to plant trees as they will die anyway, or if you do plant there is nothing better to plant than the Lombardy poplar or box elder. The Lombardy poplar and box elder, as the early missionaries of introduced tree life, have served their purpose well, and now should give way to the more permanent and valuable trees. More than one hundred trees have proven themselves valuable for our conditions here in the state.

One of the most serious drawbacks to more general planting has been the difficulty of securing suitable stock at a reasonable price. This may be overcome in a measure by growing one's own trees. While this plan is not generally recommended it is feasible, especially where the farmer has a suitable piece of land and time to care for the plants. It usually costs more to grow them than equally as good or better trees can be bought for from the nursery.

Willows, cottonwoods and aspens can be easily propagated from cuttings made from the present year's growth taken any time while the trees are dormant. These cuttings should be about seven inches long, and if made in the fall should be stored until spring, or, better still, planted at once in the nursery. The only precaution necessary is to set them down to the top bud and make the soil very firm around their bases.

The seeds of most of our common trees, such as maples, ash, oak, catalpa, box elder, etc., ripening in the fall of the

year, should be gathered and mixed with an equal amount of sand, thoroughly moistened and stored in a cool cellar or on the north side of a building, where they will remain moist all winter long. Very early in spring they should be planted in nursery rows from one to two inches deep, and the soil packed very firmly around them. Another plan is to gather and plant at once, which is best where there is no danger of the seeds being molested by squirrels and birds, or being thrown out by the alternate freezing and thawing of winter weather.

The seeds of elm, red and white maple ripen the last of June and must be gathered and planted at once or mixed in moist sand or moss and kept moist until planting time, while box elder, catalpa, green and white ash may be gathered when ripe, dried out and stored in a dry, cool place and planted in spring.

The seeds of honey locust, black locust and the coffee bean tree are always slow to germinate unless hastened by scalding. When ready to plant these seeds pour boiling water over them and permit them to remain in it until the water has cooled. Sift or pick out the swollen seeds and repeat the operation for the remainder. Seeds treated in this manner must be planted at once in moist soil or they will soon perish.

Evergreen seeds require more care and skill than the deciduous trees. No one should attempt to grow evergreen seedlings who has not plenty of time and at least most of the conveniences for caring for them. The soil for the seed bed should be sandy and moist, available water for watering handy and some provision for shading. The more common plan is to plant the seed beds four feet wide and of indefinite length. Two or more beds may be established side by side with four-foot paths between them. Sow the seeds, making the soil very firm around them, and construct some sort of a shade that will cut off about one-half of the sun's rays. This may be lath frames set two feet above the beds, and covering only the beds or six feet above, and covering both the beds and the paths. The latter is the best, since it gives better air circulation and room to care for the young plants.

The transplanting of trees is always accompanied by greater or lesser danger of loss, or at least backset. This is caused by the loss of feeding roots, the drying of the bark of the roots, thus making activity impossible, or failure on the part of the planter to make the soil firm around the roots and thereby preventing wind injury to the newly formed rootlets.

Immediately upon receiving trees from the nursery, if they are moist and in good condition, heel in in moist soil. If the roots are dry and the top shriveled bury top roots and all in moist soil for a few days before planting. This will frequently save trees which ordinary treatment would not. When ready to plant dig the holes large enough to accommo-

date the roots without cramping and deep enough so that when the tree is transplanted it will stand from one to two inches deeper than it stood in the nursery. Prune off all injured or bruised parts of the roots in such manner that the cut ends will rest on the bottom of the hole, or at least will face downward. Place the tree in the hole in such a way that it will rest firmly on the bottom; now fill in with moist, rich soil until the hole is from one-third to one-half full, or at least until the roots are thoroughly covered, shake the tree slightly to work the soil among the roots and then get into the hole with both feet and tramp the soil until it is firm. If it is impossible to firm it with the feet use a piece of 2x4 six to eight feet long, the end of which should be padded, and tamp until firm. Now fill the hole and leave the surface loose and smooth, but never cloddy or covered with chunks of sod.

If water is to be used it is best to dig the holes from one to two days before planting and put from two to three gallons of water in each hole, permitting it to entirely soak away before planting, but never apply it to the surface of the ground around the trees after they are transplanted, as it will do more harm than good.

The roots of deciduous trees may become very dry and yet not suffer serious injury, but evergreens must never be permitted to dry, as they have resinous sap, which hardens when it dries out or comes in contact with the air, immediately killing the trees.

## "Hawkeye Tree Protector"

Protects your trees against rabbits, mice and other tree gnawers; also against cut worms, sun scald, and skinning by cultivation. Cost is but a trifle. The value of one tree is more than the cost of all the Hawkeye Protectors you will need. Write for prices and full description.

Burlington Basket Co.

STATE AGENTS

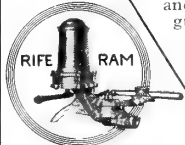
G. M. Westland, Wenatchee, Wash.  
Fair Oaks Nursery Co., Traverse City, Mich.  
Welch Nursery Co., Madison, Ala.  
Chas. Reyburn, Earl Fruit Co., Placerville, Cal.  
Parker Bros. Nursery Co., Fayetteville, Ark.  
C. H. Webster, The Dalles, Oregon  
F. F. Powell, Stevensville, Mont.  
Humphrey Nurseries, Humphrey, Neb.  
Geo. F. Hall, Wendall, Idaho  
Brown Bros. Nursery Co., Rochester, N. Y.  
Elizabeth Nursery Co., Elizabeth, N. J.  
H. C. Baker, Route 2, Tunkhannock, Pa.  
O. K. Nurseries, Wynnewood, Okla.  
Jefferson Nursery Co., Monticello, Fla.  
J. A. Hess, Salt Lake City, Utah  
Denver Nurseries, Denver, Colo.  
Frank Brown & Son Co., Paynesville, Minn.  
Elm Brook Farm Co., Hallowell, Me.

**Raise Water for Your Fruit**  
—all you need when and where required  
—with an automatic Rife Ram.

Costs little to install  
—nothing to operate.  
Raises water 30 feet for every foot of fall.  
Land lying above canal or stream supplied with water.  
Pumps automatically day and night, winter and summer. Fully guaranteed.  
If there is a stream, pond or spring within a mile write for plans, book and trial offer, free.

**RIFE RAMS**  
Pump Water Automatically Day and Night

**RIFE ENGINE CO.**  
2525 Trinity Building New York



**LILLY'S BEST BEE SUPPLIES**

Are standard—the best to be had for money-making purposes. We are Agents for Lewis Bee Ware. Send for Catalog. Most authoritative Bee Book issued, 84 pages of definite information. Illustrated.

**The Chas. H. Lilly Co. Seattle.**





Evergreen trees can be transplanted almost any month of the year, but the best results at the station have been secured by transplanting in spring just as the buds are beginning to expand, which is usually from the tenth of April to the first of May, or immediately after the spring growth has hardened, which is from the middle to the last of July. Trees transplanted during these seasons of the year have given universally good results. Deciduous trees must be transplanted during the fall after their wood has thoroughly ripened or very early in spring. Late spring planting in Eastern Washington is not at all satisfactory on account of the long dry summer, and should always be discouraged.

Nothing can take the place of clean culture for trees. Surface watering is worse than no water, and grass and weeds will permanently injure, if not kill, newly transplanted trees. If cultivation with horse tools is possible this is the best and most economical way to care for them. If this is not possible then hand raking and hoeing is the next best thing. If the trees stand alone on a lawn or park that is frequently watered it is best to keep the grass from growing closer than five or six feet and mulch this area with well rotted manure. By applying water to this mulch the ground cannot dry out and bake, the mulch serving the purpose of holding the moisture and adding fertility. Once or twice during the summer the mulch should be raked off and the soil forked over or spaded up thoroughly and then raked down again and the mulch put back. This is to make plant food available and keep the soil from becoming hard.

Every large farm in the Inland Empire should have its wood lot. A wood lot is to the farm what the work basket is to the wife, and while it may be given the poorest, hardest soil on the farm, yet at present prices for fuel and fence posts it will pay good interest on the best farm land in the country if carefully planted to trees that are adapted to the conditions and regularly cultivated for the first few years. By practicing a system of coppice work regular annual returns may be expected after the sixth year, and from that time forward posts, poles and fuel may be annually cut from the wood lot.

The following are a few trees that are extremely worthy of mention: The Norway and Sycamore maples are especially commended for general shade planting on account of their hardiness, rapid growth, ability to stand drouth, good shade producing habits and general freedom from plant pests. The black locust, Carolina poplar and silver poplar are extremely valuable for very quick shade, wind breaks, etc., and should be used in all collections. The English maple, flowering ash, English oak and European linden have all produced such strikingly attractive trees on the campus that everyone who sees them admires them. These trees, while not so rapid of growth, make dense shade and are of great value for places where medium sized, attractive trees are desired. The cut-leaved weeping birch, hardy catalpa, golden willow and Colorado blue spruce are all so hardy and universally admired that no large lawn or park should be planted without one or more of these being included. The large wood producing ability of the European larch, white willow, cottonwood and black locust makes these trees very profitable to grow for post and fuel purposes.

From a long and varied experience we would suggest the planting of those trees mentioned in the following list for special purposes:

Large, rapid growing trees for street and shade: Black locust, Carolina poplar, silver poplar, cottonwood and Oregon maple. The last mentioned for west of the Cascades only.

Large, medium growing trees for street and shade: Sycamore maple, Norway maple, silver maple, Scotch elm, English oak, English maple, flowering ash, green ash, hackberry, box elder, black walnut, scarlet oak, European linden and horse chestnut.

Deciduous trees for lawn or park planting: Cut-leaved weeping birch, European linden, flowering ash, Wein's cut-leaved maple, Japanese chestnut, American hornbeam, English oak, scarlet oak, red maple, American mountain ash, white birch, European mountain ash, Bolles poplar, Lombardy poplar, golden willow, European larch, native thorn and hardy catalpa.

Evergreen trees for lawn and park planting: Colorado blue spruce, Norway spruce, Engelman's spruce, Black Hills spruce, Douglas fir, white fir, Irish juniper, Austrian pine, Scotch pine, dwarf mountain pine and giant cedar.

Best trees for single row wind breaks or tall screens: Lombardy poplar, white willow, apple, Douglas fir, Austrian pine, Scotch pine, box elder, Norway spruce and giant cedar.

The best trees for single row wind breaks or low screens: English maple, golden willow, American hornbeam, Engelman's spruce and white spruce.

The best trees to plant for fuel purposes: European larch, black locust, Austrian pine, white willow, cottonwood and white maple.

The best trees to plant on dry soil or in windy, exposed situations: Black locust, box elder, Russian wild olive, green ash, English maple, Black Hills spruce, Scotch pine, Austrian pine and Engelman's spruce.

◆ ◆ ◆

Editor Better Fruit:

I enclose herewith one dollar. Please place my name on your list. "Better Fruit" is a dandy and should be in every fruit grower's home. Yours truly, Ben E. Meyer, Springfield, Oregon.

HIGHEST QUALITY  
**SEEDS AND SUPPLIES**


Send for our handsome 104-page catalog. It tells about the right stock for this Coast. It is compiled and written by a man who knows. His twenty years' experience here enables him to do this and do it right. Some Eastern catalogs are more elaborate, but they are Eastern guides, not Western. Understand?

**ROUTLEDGE SEED & FLORAL CO.**

169 Second Street  
Portland, Oregon

**W. F. LARAWAY**

DOCTOR OF OPHTHALMOLOGY

EYES TESTED  LENSES GROUND

Over 30 Years' Experience

Telescopes, Field Glasses  
Magnifiers to examine scale

Hood River Oregon and Glenwood Iowa

**Ryan & Newton Company**

Wholesale Fruits & Produce

Spokane, Washington

We have modern cold storage facilities essential for the handling of your products

Reliable Market Reports

**PROMPT CASH RETURNS**



**Let Me Help You Make More Money Out of Your Fruits and Vegetables**

Don't let your surplus fruits, etc., go to waste. Can them, the same as a large canning factory. Small investment, big profits. Easy to build up a profitable business of your own, on the farm.

**A Stahl Canner Will Do It**

Made in all sizes. Prices \$4.20 up. Fully guaranteed. Over 100,000 in use. I furnish everything needed to make a complete canning factory on the farm. My great Canners Book describes Canners, and tells how to market canned goods. It's free for the asking. Write to-day—NOW.

**F. S. STAHL, Box 304-M Quincy, Ill.**

**SEED CATALOG**

READY TO MAIL

The leading Seed Catalog of the West—Lilly's Catalog. Your 1911 crop depends on GOOD seed—send for this Catalog and get the best. Write now to the CHAS. H. LILLY CO., Seattle, Wn.

**LILLY'S**

CATALOG  
LILLY'S SEEDS  
1911



# USE

## Neutral Arsenate of Lead

A strictly neutral Arsenate of Lead is the only kind that should be used by growers on the Pacific Coast and irrigated sections. Any other kind is exceedingly dangerous.

*Sherwin-Williams New Process Arsenate of Lead is the highest possible type of this form of material.*

A Neutral Arsenate of Lead is the only form that can be safely combined with Lime-Sulfur Solution for summer spraying, and Sherwin-Williams New Process Arsenate of Lead is especially made for this purpose. An acid Arsenate of Lead when combined with Lime-Sulfur will cause severe burning.

Because of our special method of manufacture, this product has greater adhesiveness than any other combination of lead and arsenic. By reason of its complete and thorough combination it is affected very little by alkalis and will not poison the soil or trees.

Read the following extract regarding the value of a Neutral Arsenate of Lead, from a paper by Professor O. S. Watkins of the University of Illinois, read before the Fifty-fifth Annual Convention of the

February 23, 1911.  
Sherwin-Williams Company,  
Cleveland, Ohio:

My extended absence from home has prevented my answering your inquiry sooner. I am pleased to inform you that my last year's experience with your Arsenate of Lead spray has been very satisfactory. While the test made during the seasons of 1909 and 1910 was all that one could expect in controlling the codling moth, yet my last year's test was still better. My total loss (by actual count) of injured fruit was a little less than one-fifth of one per cent. My crop was about 8,000 boxes or bushels. I used your Arsenate of Lead four times:

First spray, just as the calyx was beginning to close.

Second spray, one month later.

Third spray, about three weeks later.

Fourth spray, three weeks later.

While my crop was practically free from injury by the moth, some of my neighbors who used other sprays, early applied, had a very heavy loss.

Yours sincerely,

A. I. Mason.  
Hood River, Oregon.

Illinois Horticultural Society,  
February 9, 1911:

"Chemically speaking, there are a number of Lead Arsenates; however, the two most common ones are the neutral and acid. The commercial brands are generally a mixture of the two, sometimes the acid predominating and vice versa. Only one, Sherwin-Williams, proved to be entirely neutral." In this test Sherwin-Williams Lead showed only 6.3% russet, while the next lowest showed 22%.

Because of its thorough combination with lead it never burns the foliage or russets the fruit.

Sherwin-Williams New Process Arsenate of Lead is endorsed as a high grade Neutral Arsenate of Lead by all leading disinterested authorities. Guaranteed under Insecticide Act of 1910.

## The Sherwin-Williams Co.

MAKERS OF HIGHEST GRADE  
INSECTICIDES

707 Canal Road

CLEVELAND, OHIO



## You Need Your Sprayer Now

Many fruit growers wait till the last minute before deciding to buy a power sprayer. You should have your outfit now.



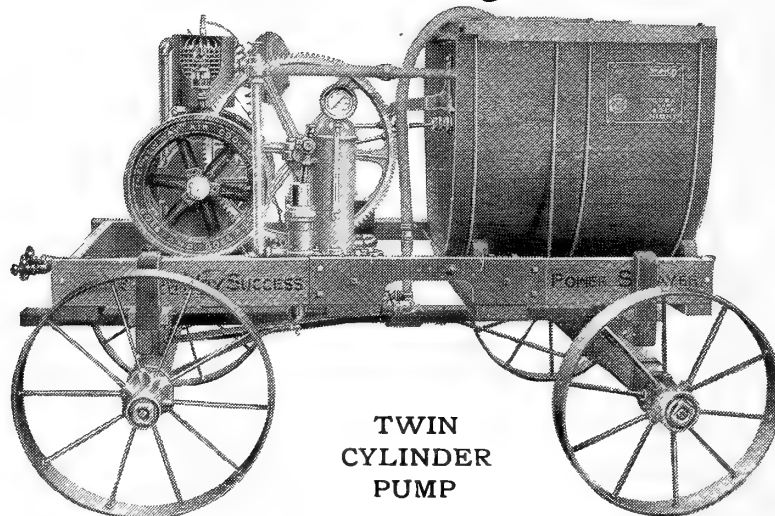
## WIRE US YOUR ORDER FOR THE "NEW-WAY" SUCCESS OUTFIT

We ship outfits same day orders arrive, while stock lasts. Last year we had to refuse late orders; couldn't fill them; no stock. Don't delay now.

## Why You Should Buy The "New-Way" Success

Light  
Weight

Practical  
on  
Hillsides



TWIN  
CYLINDER  
PUMP

High  
Pressure

200  
Pounds  
Constantly

*The Engine is Most Important.* The "New Way" air cooled is a farm engine for every day in the year. Always ready to belt to other machinery. Steady, dependable, all day power for all day spraying.

*The Pump* has twin cylinders, outside packed plungers; repacked in a few minutes; no time lost. Constant 200 pound pressure; direct gear to engine and both on one base.

*The Tank* is clear cypress, holds 125 gallons. Solution is kept thoroughly mixed by mechanical agitator.



GET YOUR ORDERS IN NOW FOR  
IMMEDIATE SHIPMENT

## John Deere Plow Co.

SAN FRANCISCO

PORTLAND

SPOKANE



# IMPORTED NURSERY STOCK IN GREAT DEMAND

BY J. B. BILKINGTON, OF THE PILKINTON NURSERY, PORTLAND, OREGON

**D**ISCUSSING this subject the thought suggests itself: How many nurserymen are aware of the extent of the importing business in the United States of foreign grown nursery stock, and how many orchardists know that their prized trees, bearing three-dollars-a-box apples, six-dollar pears, and cherry trees of such varieties as Lambert, Royal Ann and Bing are grafted or budded on seedlings "made in Germany"?

At the present time, when the demand for all kinds of nursery stock is the greatest known in history, it is reasonable to suppose that the foreign grower gets his share of the increased patronage; and by referring to statistics in the matter we find that in 1903 (or the season ending June 30th, 1903) the value of importations amounted to nearly one million four hundred thousand dollars. This amount has been increased yearly since that time until the season of 1909, when the value reached nearly two million dollars. Figures are not yet available for the season just past. When one stops to consider that these amounts represent values at the nurseries in Europe, and that on this imported stock there is paid a duty averaging more than twenty-five per cent, then the freight charges, it is an easy matter to figure that the laid-down cost of foreign nursery stock in the United States for the past season will range from three to four million dollars.

During the past year duties on foreign nursery stock were advanced somewhat, which will have the tendency to still further increase the cost of imported goods. It will also have a tendency to increase the home production of this class of stock. But when one realizes the scope of the nursery business and how hard it is for a nurseryman to grow everything he has call for it will eventually result in specializing. For instance, at the present time there are a number of rose nurseries in the United States. Other nurserymen give their exclusive attention to ornamentals, fruit trees, herbaceous stocks and other lines, any one of which is a business in itself. And if growers would confine themselves to one line rather than undertake to grow

a little of everything it would undoubtedly benefit the general trade so far as quality and production is concerned. The importation of foreign stock will continue just as long as there is a scarcity at home of the stock wanted; and, too, when large sizes are used that are two or three, up to ten years of age (and it is impossible to produce these in less time), it necessitates going to a foreign market, where these goods are to be had already grown.

As to the comparison between foreign and home-grown stock this is a matter that will have to work itself out. There are plenty of arguments on both sides of the question. Speaking from my experience, I have found that imported stock, particularly small stock—at the age of one or two years—has invariably reached me in good condition, and my losses in transplanting have been little or nothing, yet these same shipments might have been subjected to cold weather while in transit and the loss would have been great. Larger stock does not carry so well, and except to meet the immediate demand I would gladly discontinue the importation of same only that it requires several years to grow these things here, and patrons do not find small stock satisfactory for immediate results.

In fruit tree stocks my importations consist principally of apple, cherry, pear and Myrabolan plum seedlings, which are usually brought in when they are one year old.

Of the seedlings mentioned apple are the only ones that are extensively grown in the United States, and the product of apple seedlings in the Mississippi Valley exceeds the foreign production. Nurserymen generally prefer the home-grown to foreign seedlings.

In the June issue of the National Nurseryman there appears an article by a prominent American nurseryman who strongly favors imported stocks. His experience is based on a number of years' use of home-grown seedlings, but after experimenting placed an order last season for one million French grown apple seedlings. He attributes the superiority of imported stock over domestic to the fact that in Europe they have cheap expert labor. And herein I believe

lies the secret of the necessity of importing anything in the way of nursery stock other than new varieties. In Europe you will find that nursery workmen have been reared in the business, and when you find three generations working side by side the matter of competency and thoroughness cannot well be questioned. They are thorough, put in long hours and draw but small pay in comparison with wages paid in this country, so that there is a standard of uniformity and excellence in their work that as yet we are unable to duplicate. These nursery workmen are contented and satisfied, and probably have no other hope or expectation.

The supply usually seems adequate to the demand, although contributory causes, such as shortage of seed supply, drouth and floods, have their effect upon the output.

Importers who have been buying for a number of years past will also note that there has been a gradual increase in prices, which is always attributed to some unforeseen cause, but there is an impression that foreign growers who have supplied the American trade for years are beginning to learn the advantages of trusts and combines in the matter of securing better prices, and there is also a suspicion that Yankee shrewdness is invading the foreign field and the "corners" on the market are being worked upon the small American buyer. The result is that we are paying more for imported stock than formerly, and consequently we are also receiving more for our products. So this condition is not unreasonable, and for the future I see no ground for a decrease in importations, especially if we must continue to pay two dollars and upward a day for unskilled labor.

## J. F. LITTOOY

CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO

# ORCHARD YARN

For methods and advantages in using Orchard Yarn read the first article in December issue of "Better Fruit" by a world expert.

Tarred Orchard Yarn is used by the foremost growers in all sections.

Natural, practical, economical method of supporting heavily laden trees instead of props. Makes cultivation easier and does not chafe the limbs.

Testimony: More Yarn sold last year than all previous years combined. Sold by all dealers.

Manufactured and sold by

**THE PORTLAND CORDAGE COMPANY**

PORTLAND, OREGON

SEATTLE, WASHINGTON

# CONCERNING CO-OPERATIVE FRUIT ORGANIZATION

BY C. E. WHISLER, MEDFORD, OREGON

**T**HAT co-operation is the basis of good business, and that the more centralized the effort the greater is the measure of success attained, is becoming more and more recognized; but to obtain this result good business principles must be the basis of organization.

Organized effort may be as futile of desired results as is individual effort, and will be unless the principles of the organization are followed, and the better the understanding of those principles, together with the knowledge of the difficulties encountered, both within as well as without the organization, on the part of those who are attempting to co-operate the more is the assurance that those principles will be followed.

To help to a better understanding of the principles of co-operation as well as to show the need for the same is the purpose of this article.

It has long been understood that "In union there is strength"—but why? How does union promote strength? This is the day of big business. The larger the accumulation of business under one head the more cheaply it can be done, as well as being done with more efficiency, provided, always, that good methods are followed.

In the matter of fruit producers' organizations it is believed that as many, if not more, difficulties present themselves for adjustment than in an organization for the handling of any other product. The complications arising, owing to the nature of the product handled, are much more acute. For instance, the values of the product are more varied as well as being subject to more rapid changes in quality; also subject to more rapid changes of market values than almost any other product. This being true, it is essential that provision be made to meet these varying conditions, which, of course, become the basis of organization. Let us, therefore, notice the needs of organization. Without it each grower must act as agent for himself, both in buying his supplies and in selling his product. In the buying of his supplies it has long been established that purchases on a large scale can be made much more cheaply than on a small

scale: First, because it enables the large concerns from whom supplies are obtained to handle the same amount of goods much more cheaply. Thus by purchasing box material, wrapping paper, nails, spray material, etc., in carlot shipments the price of the supplies are greatly reduced. Second, because by handling in large quantities it enables them to handle a greater amount of goods with the same labor. That makes it possible, by co-operation, to purchase supplies in large quantities at reduced prices, and by dealing these out to the consumer it is possible, with a small fee to cover handling and expense charges, for him to obtain his supplies at a greatly reduced price from what he would have to pay were he purchasing direct. In the selling of his product he is still at much worse disadvantage. Again, the large concerns handling his product prefer to deal with large concerns for the same reason that the dealer in his supplies offers "big business."

Again, the individual shipper cannot so readily obtain that information needed, both with regard to prices and the supply on the markets of that food product with which his fruit comes the most directly into competition, all of which entails much labor and expense, and is essential to successful operation. The same requirements enter into both sides of his transaction, namely, "big business."

It is, therefore, evident that the smaller the grower the more he feels the need of organization, and a co-operative organization can only justify its existence by securing for him his supplies at the best minimum price and returning to him for his product the best possible maximum price. This is the "milk in the cocoanut." And to obtain this result requires the application of good business principles on the part of the operators as well as patience and forbearance on the part of the producers.

As the purchase of supplies is a simple matter and of minor importance compared with the handling of the product this article will waste no time with that question, but will attempt to deal at some length with the question of the marketing of the product.

Let it be remembered that every specimen of fruit going into the market does so in competition with every other specimen of the same kind of fruit, and not only so, but it goes in competition to a greater or lesser degree with every other food product.

To regulate competition among fruits of the same kind and to overcome competition of food products of other kinds is within the realm of good business, and to obtain that price for your fruit which truly measures its relative value as compared with all products with which it comes in competition is the right measure of successful effort. This brings us to a consideration of the nature of the product handled. Let us consider especially pears and apples: First, it is of a very perishable nature, extending in its life from but a few weeks to a few months at best. All of it must be consumed or decay within one year (unlike many manufactured food products, which can

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread

APPLES

PLUMS

PEARS

PEACHES

PRUNES

# WHITE SALMON VALLEY

THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.

**WHERE APPLES, CHERRIES, PEACHES, PEARs, PRUNES AND STRAWBERRIES GROW TO PERFECTION**

A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.

We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap.

WRITE US FOR DESCRIPTIVE MATTER AND PRICES

**ESTES REALTY & INVESTMENT CO.**

White Salmon, Washington

BERRIES

CHERRIES

STRAWBERRIES

NUTS

JONATHANS NEWTOWNS

SPITZENBERGS WINESAPS

WE GUARANTEE RESULTS

# Crest Spray

A HEAVY MISCIBLE OIL FOR  
ORCHARDS AND GARDENS

An Effective

## EXTERMINATOR

of all

### Insect Life, Germs and Vermin

CREST SPRAY is the result of scientific and practical experiments by the best phytopathologists and chemists.

ANALYSIS: Tar and kindred products, Naphthal, Pyroligneous Acid, Douglas Fir Oil, Phenols, Creosote, Turpentine, Resin, Sulphur and Soda.

#### DIFFERS FROM OTHER SPRAYS

Crest Spray is a soluble or miscible oil and mixes readily with water. It remains in solution, forming an emulsion.

It is non-poisonous and harmless to operator.

Requires no boiling or preparation like the Lime-Sulphur.

Its use is a saving of time and money.

Home-made Lime-Sulphur costs from 1½ cents to 2 cents per gallon.

Crest Spray costs from 1½ cents to 3 cents per gallon.

A gallon of Crest Spray has a covering power almost twice as great as Lime-Sulphur, reducing the cost nearly one-half.

SCIENTIFIC, EFFECTIVE, CON-  
VENIENT, ECONOMICAL

#### PRICES:

Barrels, 25 or 50 gallons, per gallon	\$1.25
Five-gallon can, per gallon	- 1.35
One-gallon can, per gallon	- 1.50
Half-gallon can	- .90
Quart can	- .50
Pint can	- .30

Testimonials sent on application

### Crest Chemical Co.

84 Bell Street

Seattle, U. S. A.

be held almost indefinitely). This makes the regulation of competition very difficult. Second, it is necessarily gathered within a period of approximately eight weeks and must be dealt out to the consuming public through a period of less than ten months. Third, the quality of the fruits is varied from year to year by the varying climatic conditions under which it is produced, even on the same soil, while different soils and different climates the variations become very acute.

Successful co-operation demands, therefore, first, that every participant be treated as every other participant in the organization; second, that provision be made for protecting the equities of the individual, that this protection should be embodied in a formula of working rules governing the action of both individual and officials, and should be accepted as the by-laws of the organization and considered by everyone as being as sacred and as inviolate as the "moral code;" third, full knowledge of all proceedings should be within easy accessibility of all participants. These should be sufficiently broad and wise in their provisions as to establish full confidence in their efficiency to obtain better results under co-operation than by individual effort because confidence is the bulwark of successful action.

Let us now look at the proposition of marketing. From 1895 to 1900 the average annual production of apples in the United States was 51,619,000 barrels, or 154,857,000 boxes; from 1905 to 1910 the average annual production in the United States was 26,844,000 barrels, or 70,532,000 boxes. All of these apples are gathered at practically the same time, consequently must be taken care of from the time of gathering until they have gone into consumption. This necessitates the consideration of loss in decay, of interest on capital invested in products and of expense in handling and holding of products. All this must be met somewhere.

Competition among products lowers the price of the product. To regulate the price is to first regulate the competition. This is accomplished by regu-

lating the offerings at any one time to meet the consumptive demand for the product. But to do this necessitates the consideration of the questions of decay. Of interest on capital invested in the product, and of handling and holding expense, and in co-operation these questions must be considered as relating to the holdings of the individual in proportion as his equities are to the total product handled by the organization, and in this way only can "every participant be treated as every other participant" and "full protection be given to the equities of the individual." Otherwise it necessarily follows that some would profit by better prices than others, which is not equality, while others would suffer loss in decay, interest on capital invested and expense of handling and holding product. This also is inequality. Therefore, to accomplish the best results under co-operation it is necessary that the product handled be considered as the property of the whole organization, but here comes the difficulty of adjusting the equities of the individual to the equities of the whole. Values of fruit are governed by the relative merit of the fruit of the same variety as well as by the relative merits as to other varieties, and, as before said, the merits are so varying that it is impossible to be exact, consequently some concessions must be made in the hope that the benefits derived by co-operation on the whole will overcome any losses by reason of the concessions made. This requires careful consideration, patience and forbearance, and further requires that there be strong continuity on the part of those endeavoring to co-operate. Shattered confidence invites disintegration and strict integrity on the part of all concerned, coupled with full publicity, is the best known preventive. Every member is fully entitled to a knowledge of the proceedings because he is a part of the organization itself, and the officers are but his servants to carry out his will. Therefore, he should consider the interest of the organization as the interest of himself, and should protect, and promote, and foster the interests of the organization through the principle of self-defense.

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

### HOOD RIVER MILLING CO.

## D. McDONALD

Hood River, Oregon

Headquarters for

FARMING AND ORCHARD

## TOOLS

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best

## Winfield Nursery, Winfield, Kansas

GROW TREES OF QUALITY

Their new work, Progressive Horticulture, fully illustrated, describes trees of quality in the making



## AMERICAN APPLE CONGRESS—AIMS AND OBJECTS

BY CLINTON L. OLIVER, SECRETARY, DENVER, COLORADO

ON the 15th of December, 1910, there assembled in Denver, Colorado, at the call of Governor Shafroth of Colorado, a body of delegates representing the apple industry of eight apple producing states. The object of this convention was to form an organization to be known as the American Apple Congress; this congress to have the following objects: First, to promote and diffuse knowledge concerning the apple industry on the American continent; second, to facilitate conference and deliberation among the people of the country concerning the growing and marketing of the apple crop and related interests; third, to provide means for bringing the needs of the people interested in the apple industry of the country before national and state governments; fourth, to provide ways and means for securing profitable legislation for the industry; fifth, to organize and maintain a "Transportation and Railroad Rates Bureau;" sixth, to maintain a "Continental Information Bureau on Crops, Markets and Fruit Movements," and, seventh, to promote and conduct apple expositions in connection with the congress. The most important work of the congress is that stated in objects fourth, fifth and sixth.

The legislative committee of the congress is composed of two people in each state, who have been elected by delegates from that state or appointed by the governor. It is the intention to make

this legislative bureau strong enough that should any occasion arise in which it would be necessary to send a committee to Washington to assist in passing or defeating beneficial or detrimental legislation the committee and the congress will be so supported financially and morally that this committee can be sent with all of its expenses paid.

It is intended to make the Transportation and Railroad Rates Bureau sufficiently strong so that it can successfully undertake to appear before the Interstate Commerce Commission or the traffic departments of the railroads and cope with any problem in over-charge, in weight, or rate, or neglect, or service.

The Information Bureau is to collect and distribute accurate information on crops, markets and fruit movements. The information this bureau will handle will be secured at first hand from the members of the organization in the various sections of the country, and will be distributed in confidential bulletins to

the members of the congress. There is nothing that will make the industry better than for each person interested to be accurately informed on the status of the industry in every section of the country.

The annual conventions or conferences are for the purpose of discussing the problems of the industry and outlining further work for the congress to perform. While the convention itself will be of great importance it will not compare for actual results with permanent work that will be done through the various departments and bureaus during the time between conventions.

Permanent headquarters for the congress have been opened in Denver, Colorado, and the work of organizing the various bureaus is well under way. Apple men from all over the country are becoming members, and assure the officers that they are willing to join hands in doing everything necessary to promote the interests of the industry.

♦ ♦ ♦

Editor Better Fruit:

My January number has not arrived and I can hardly keep house without "Better Fruit." Yours truly, E. E. Heston, Kimberly, Idaho.

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

**HOOD RIVER BANKING AND TRUST COMPANY**  
HOOD RIVER, OREGON

CAPITAL STOCK \$100,000      SURPLUS \$22,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, *President*  
J. W. HINRICHS, *Vice President*  
E. O. BLANCHARD, *Cashier*  
V. C. BROCK, *Assistant Cashier*

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Thorough and Conservative

Assets over \$500,000

Savings Bank in connection

LESLIE BUTLER, *President*  
F. McKERCHER, *Vice President*  
TRUMAN BUTLER, *Cashier*

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000      Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - - \$1,000,000  
Surplus and undivided profits - - - - - \$600,000

Officers:  
W. M. Ladd, *President*      R. S. Howard, Jr., *Assistant Cashier*  
Edward Cookingham, *Vice President*      J. W. Ladd, *Assistant Cashier*  
W. H. Duncleley, *Cashier*      Walter M. Cook, *Assistant Cashier*

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

# Montana Fruit Growers

AND OTHERS OF HIGH ALTITUDE

We are now ready to book your orders for fall and spring delivery of McIntosh Red and Wageners. For Northwest fruit growers in general, a full stock of all standard varieties—Spitzenbergs, Jonathans, Winesaps, Rome Beauties, etc., and all other kinds of fruit trees and shrubbery.

THIRTY-ONE YEARS IN BUSINESS

## MILTON NURSERY COMPANY

A. Miller & Sons, Incorporated

MILTON, OREGON

### SOMETHING NEW IN FRAMES FOR THE HOTBED

**H**OTBEDS and cold frames are used by professional gardeners for two objects: First, to get ahead of the weather; second, to get ahead of competition. They are used by the amateur gardener with the same two objects, but differently expressed, as follows: First, to create a bit of summer in winter time, and, second, to compel flowers and vegetables to come when they are a treat.

Whichever way you view it the main fact remains, that by growing plants in winter weather ready to set out half-grown in spring, just as soon as the ground will do, the gardener, whether professional or amateur, gains half the growing season.

If one wants these advantages from using sash he should get full measure by using the very best. The most modern sash are made to receive two layers of glass instead of one. These two layers enclose an air space five-eighths of an inch thick. This air space is dry and a non-conductor of either cold or heat. It

lets in the sunlight to warm up the bed and does not let the warmth out.

It does away with the use of boards or mats, and saves the labor of covering and uncovering cabbage, lettuce, cauliflower and any half hardy plants that are being grown. Even for tomatoes, peppers and other tender plants it is rarely necessary to put any extra covering on the two layers of glass.

Many thousands of these sash are in use by market gardeners and on private estates, and even in city yards throughout the country. They have been tested in every latitude from Middle Canada to Southern Florida, and have given such excellent results that the purchasers have written hundreds of letters praising them enthusiastically. These letters have been printed in pamphlet form for free distribution.

Especially noteworthy is a letter from H. B. Fullerton, the director of the Long Island Railroad Company's Experiment Station. Mr. Fullerton says:

"Double glass wins out. We have struck another good thing. It is the double glass sash for cold frames and hotbeds. We purchased a few for trial. We placed on contiguous beds this sash and a single glass sash and put in lettuce we had started out-of-doors late in the fall for trial purposes. The double glass gave us good heads for our home hamper just twenty days ahead of the single glass sash. Of course, the air space between the two glasses did the trick, preserving to a great extent the heat of the day, and hence keeping out the cold of the nights, acting on exactly the same principle as a double door or double window. These sash are regular size and are very cleverly constructed, needing no putty and being very readily slipped into their grooves, where they are firmly held by a special brass spring clip, which is furnished with the sash. They are a mighty good gap filler between the open air and the expensive, but necessary artificially heated greenhouse."

In a letter afterwards referring to the above report, Mr. Fullerton said:

"One item I omitted was our experience with radishes. Although Long Island seldom has a temperature drop below 24 degrees, we occasionally catch a bit of almost zero weather. One sudden drop after a heavy rain made conditions in our hotbeds and cold frames pretty serious and we lost practically all our radishes under the single glass sash, while those under the double glass sash were not injured in the least."

The double glass sash is a radically new idea in hotbeds and cold frames. It means more to gardenening than anything since the invention of the hotbed itself. It increases the size, quality and rapidity of growth of the plant, multiplies market values and profits for the gardener, and anticipates the seasons in rewarding all who prepare a little piece of ground and give it a trial.

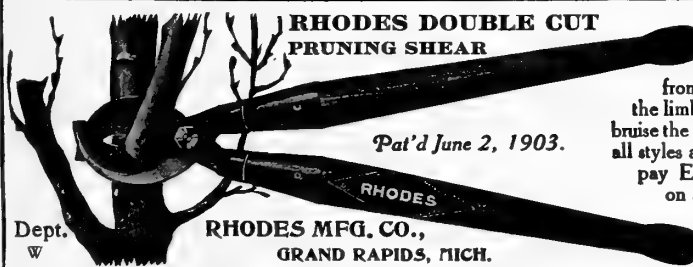
Were it more expensive than the old style single layer it would still be a fine investment because it is a superior implement, but when one considers that it not only does such good work, but is made to last a lifetime, and that it saves the cost of boards and mats and the labor of handling them it is the most economical sash to use.—Wenatchee (Washington) Republic.

### FRUIT GROWERS, YOUR ATTENTION!

Royal Ann, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

MONTE VISTA NURSERY  
SCAPPOOSE, OREGON



**RHODES DOUBLE CUT  
PRUNING SHEAR**

Pat'd June 2, 1903.

**RHODES MFG. CO.,  
GRAND RAPIDS, MICH.**

**THE only**  
pruner  
made that cuts  
from both sides of  
the limb and does not  
bruise the bark. Made in  
all styles and sizes. We  
pay Express charges  
on all orders.  
Write for  
circular and  
prices.

### STUMP DESTROYER

Send and get our formula and method for destroying stumps. Cheap, simple and effective. Price \$5.00.

**VOLL & BARKER, Chemists**

411-412 Marion Building, Seattle, Washington

# VIRGINIA

APPLE LANDS \$40 PER ACRE. WARRANTY DEED AND ABSTRACT

ORCHARD TRACTS 10 TO 40 ACRES ADJOINING HUSTLING CITY OF WAYNESBORO  
On TWO railroads, 4 hours from Washington, D. C., 10 to New York City

FREIGHT RATE IS 8½ CENTS TO NEW YORK CITY ON BUSHEL BOX OF APPLES

Proved soils, growing Stayman Winesaps, Newtown Pippins, Grimes Golden, Winesaps, Yorks and Delicious. Excellent grape soil, and grows all garden vegetables. This land is practically FROST PROOF. Labor plentiful.

OUR APPLE TREES BEAR IN FIFTH YEAR

Excellent drainage, mild, dry climate, abundance of pure water, absolutely healthy, white population, high schools, electric lights, telephones, good home market, rural delivery, two national banks.

You get the FACTS in our illustrated Booklet, free for the asking.

SHENANDOAH VALLEY APPLE LANDS CO. (INC.)

FIRST NATIONAL BANK BUILDING

WAYNESBORO, VIRGINIA

## DUFUR

Wasco County, Oregon

Grain, fruit and stock grown in the

## DUFUR

District means FIRST quality to the man who knows.

We have the choicest property in this district in large and small tracts at surprisingly low prices.

2,500 acres being planted to orchard this spring.

Call or write and give us an opportunity to tell you about this district.

Our experience and knowledge of this country is worth money to you.

**Bothfur & Johnston**

908 Chamber of Commerce  
PORTLAND, OREGON

It Costs More to Use a  
Poor Spray Than It  
Does to Buy It.

**Devoe**  
**Arsenate of Lead**  
**C. T. Raynolds Paris Green**

Devoe Lime and Sulphur Solution

makes an impregnable line of defense against ravaging insects and other tree and plant enemies; pure, unadulterated, effective.

You'll find them cheapest to use, because they save where it pays best — on the crop.

See that your dealer is ready to supply you when you need them.

**DEVOE & RAYNOLDS COMPANY**  
**CHICAGO**

New York      Kansas City      Denver

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



WE MAKE 200 DIFFERENT SIZES.  
SUITABLE FOR EVERY PURPOSE

"Experience is the best teacher"

We have had twenty-five years' experience making Cement Coated Nails, twenty years more than the makers of the "just as good" kind. Why not take advantage of our knowledge and always specify

"Pearson Nails"

which are acknowledged to be the world's standard for making fruit boxes.

They cost *no more*, keg for keg, than the imitation.

Count and quality considered, *they cost less*.

No one thing has done so much to improve the standard of fruit boxes than the use of

**Pearson Nails**

Made only by

**J. C. Pearson Co.**  
Boston, Massachusetts

**A. C. RULOFSON CO.**  
315 Monadnock Building, San Francisco  
Pacific Coast Sales Agents

## A PROMINENT NORTHWESTERN FRUIT GROWER

**T**HE president of the Northwestern Fruit Exchange of Portland, Oregon, Reginald Hascall Parsons, was born October 3, 1873, in Flushing, New York. In 1880 his family moved to Colorado Springs, Colorado.

Mr. Parsons received his education in private schools in the East and the University of California.

While living in Colorado Springs Mr. Parsons became interested in gold mining in the Cripple Creek district, which afforded an opportunity for a wide business experience. Subsequent to his residence in Colorado Mr. Parsons engaged in the manufacturing business with Bemis Brothers Bag Company at St. Louis. From St. Louis he went to San Francisco in the interest of the same company, and in 1904 removed to Seattle to establish a branch factory for the company. Mr. Parsons continued in the general management of the Seattle branch for several years, but the lure of the land was always strong in his veins, his ancestors for several generations having been engaged directly and indirectly in horticulture. It was natural, therefore, that this life should appeal to him, and he was particularly attracted to the Rogue River Valley, in Southern Oregon. He became the principal owner of one of the largest and finest orchards in America—the Hillcrest Orchard Company, at Medford, Oregon.

The Hillcrest orchard, valued at between \$400,000 and \$500,000, is one of the most famous in all the world, and its brands are in eager request in all of the principal consuming centers, being particularly well known in New York and London. The Hillcrest Orchard brand of Comice pears holds the world's record in price for car lots. A car of this brand was sold in London two years ago at an average of \$10.08 per box. This season a car of the same brand averaged \$10 per box. The Hillcrest orchard comprises two hundred acres, of which one hundred and ninety-two acres are in trees and one hundred and fifty-eight acres in bearing. There are one hundred and five acres of pears, including Bartletts, d'Anjous, Howells, Boscs, Winter Nelis and Comice, and the balance—eighty-seven acres—are in apples, the principal variety being Yellow Newtowns, and the balance Spitzenbergs and other red varieties. There are about 11,000 trees in this wonderful orchard, which is in the highest state of scientific cultivation. In Mr. Parsons' office at Hillcrest are found every modern feature of orchard record and accounting. There are maps of various kinds, some showing land contour, water and air drainage, etc., and others showing the location and variety of every tree of the eleven thousand. Mr. Parsons is working on a pathological record by which he will be able to trace the history of every tree in the orchard and keep a record of its bearing from year to year. The Hillcrest orchard has every modern mechanical appliance. Packing houses, fire system and barns were built on the most modern lines.

Mr. Parsons says modern orchardry is practically manufacturing, and his business is conducted accordingly. It is his ambition to have the Hillcrest orchard pass, undivided, to his children and his children's children. He is not a land promoter or real estate operator in any sense of the word, but a fruit grower first and last.

It became apparent to him very soon after becoming interested in fruit growing that the weakest side of the industry from the growers' standpoint was the assembling and marketing of the fruit. Realizing the difficulties of the individual



REGINALD HASCALL PARSONS  
President Northwestern Fruit Exchange

grower, no matter how large a producer he may be, in meeting the demands of the increasing supply of deciduous fruit produced in the Northwest, he became instrumental in the formation of the Rogue River Fruit and Produce Association at Medford. This step having been successfully taken, it became further apparent that without a consolidation of the common interests of the entire Northwest in some strong, practical central selling agency, it would be impossible to conduct the marketing of the fruit in a scientific and thorough manner. The elimination of wasteful competition was the main thing to be brought about, from the growing of the fruit to the final consumption of it. During the latter part of July, 1910, the Northwestern Fruit Exchange was organized, with Mr. Parsons as president and other prominent and public spirited fruit growers, representing other important producing districts in the Northwest, as officers and directors. The Exchange has met with phenomenal success, having been carefully organized and conducted with the view of effecting a wide distribution of the fruit, which would permit the avoidance of the crowded centers and thereby enable better prices to be obtained. About seven hundred cars were put at

the disposal of the Exchange during its first season by various fruit growers' associations, with results which have been universally gratifying to the growers. Mr. Parsons has cast his lot with the fruit growers and producers of the Northwest and is doing his best to aid in solving the problems connected with the industry. He has given a great deal of time to the direction of the Exchange and its success is largely due to his public spirited work.

In all of his previous business experience Mr. Parsons has shown his wide public spirit. He is a member of the Municipal League and Chamber of Commerce of Seattle and director in the Title Trust Company of that city. Before leaving Seattle for Medford he was chairman of the "City Beautiful" and a member of various municipal committees engaged in solving some of the more important municipal problems.

## FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

### BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

*We solicit your patronage*

**Bridal Veil Lumbering Co.**  
Hood River, Oregon

## Washington Nursery News

MAY, 1911

Our big selling season for fall 1910 and spring 1911 is now history. We have had another record season of satisfied customers and are gratified beyond measure at the many compliments we have received for our stock.

We do not, however, forget the customer who may have a grievance, due to some matter over which neither of us have any control, and if there is anything unsatisfactory in any order at any time, we want to know it.

We appreciate the confidence and good will of our thousands of satisfied customers more than words can express. We want to merit their continued good will, and if fair, honest dealing will win and hold it we have no fears of losing ground.

Our 1911 spring plant is looking fine at this date. We confidently look forward to the biggest and best stand of trees we have ever grown in Toppenish. We have our work well in hand and as usual are sparing no expense to grow the best trees that good soil, sunshine, cultivation and moisture will produce.

Our new catalog will soon be off the press. If interested drop us a line.

**Washington Nursery Co.**  
TOPPENISH, WASH.

Salesmen Everywhere More Wanted



AS IT COMES FLAT

# "Save-Time"

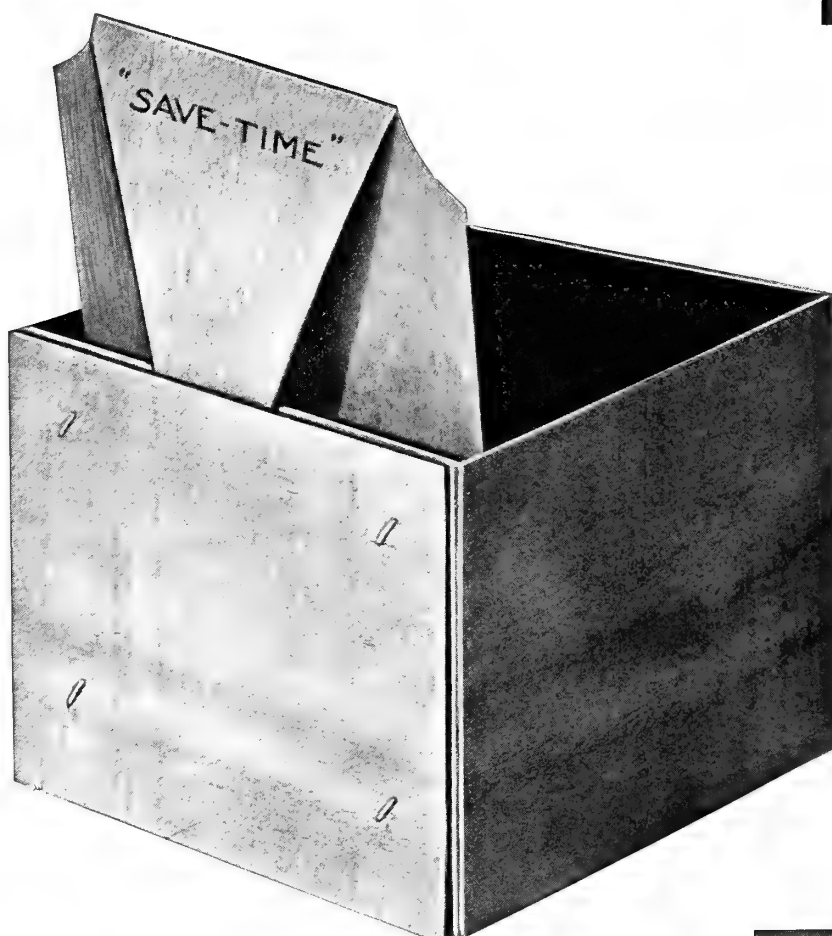
SIMPLY PERFECT

## Folding Berry Box

Made from Pacific Coast Spruce



AS IT OPENS



AS IT FASTENS DOWN

DON'T STAPLE  
SAVE YOUR TIME  
WHEN YOU  
NEED IT

PICKERS WILL  
SET UP THIS BOX  
IT IS SO EASY

PACKED  
THREE BUNDLES  
TO A  
THOUSAND

ASK YOUR  
DEALER OR WRITE  
OUR AGENTS  
OR US AND DO IT  
EARLY

EASILY MADE UP

NO BREAKAGE  
OR WASTE

SOLID ONE-PIECE  
BOTTOM

VERY RIGID

NO STAPLES  
IN CONTACT WITH  
CONTENTS

REMAINS IN  
PERFECT POSITION

MANUFACTURED BY

### Pacific Fruit Package Co.

Raymond, Washington

H. B. HEWITT, Pres. and Treas.

J. H. HEWITT, Vice Pres.

O. C. FENLASON, Sec. and Mgr.

Agents Portland, Oregon, Territory:

STANDARD BOX & LUMBER CO.

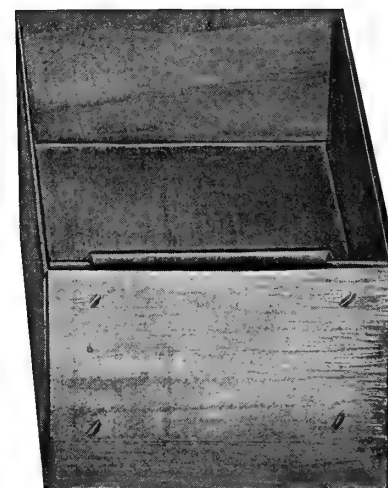
East Pine and Water Streets  
PORTLAND, OREGON

WASHINGTON MILL COMPANY

Agents Spokane Territory

Spokane, Washington

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT



AS YOU FILL IT



# Make Your Place Profitable then *Beautify* It

Study your problem, formulate your plans, get ready for Fall Planting. *I can help you.* I grow large quantities of standard commercial varieties of APPLE, PEAR, PRUNE, PEACH and CHERRY TREES; also NUTS, VINES and PLANTS. I have the largest and best assorted stock of

## *Ornamental Shrubs, Trees and Vines*

both deciduous and evergreen, in the Northwest. LANDSCAPE DEPARTMENT, in charge of Mr. Arthur L. Peck, fully equipped to meet all requirements.

**J. B. PILKINGTON, Nurseryman**  
PORTLAND, OREGON

OFFICE AND DISPLAY GROUNDS—  
246 Main Street, corner Second  
Postoffice Box 242

SEND FOR  
CATALOG

NURSERIES—On Columbia Boulevard,  
near Vancouver car line; at Durham and  
near Tualatin.

## PRUNING THE ORNAMENTAL TREES AND SHRUBS

BY J. J. THORNBUR, UNIVERSITY OF ARIZONIA

THERE are few ornamental trees or shrubs that do not require occasional pruning or trimming at one season or another for their best growth and development. The extent of this, with certain exceptions, however, is often quite limited, and in this respect ornamental plants differ from fruit trees. Pruning is usually given too little attention by the amateur planter and home-maker, with the result that the task is put off as long as possible to be finally disposed of with little or no forethought at one "fell stroke," as it were, of the axe or saw, regardless of results.

It goes without saying that all newly set trees should have their branches cut back to correspond with the loss of roots incident to transplanting, though this does not mean that such trees are to be reduced to poles. At planting time all mutilated parts of roots should be removed, and on trees that are of considerable size, i. e., eight feet or so high, the main limbs should be cut back within twelve or fourteen inches of the trunk, the leader, of course, being retained. A sufficient number, varying with the kind of tree, of the more vigorous of these main limbs are left to form the framework of the crown. These should be disposed at nearly equal angles about the trunk, and not lie in the same horizontal plane. If handled in this manner such trees as ash, locust, mulberry, cottonwood and sycamore will need little

further attention for some years, and will usually develop into pleasing, symmetrical forms. When small trees are used considerable pruning is often needed in first few years after planting on account of excessive growth through climatic conditions, cultivation, enriched soil or extra water supply. This growth commonly manifests itself in watersprouts, over-development of the head, causing top-heaviness and leaning, or in extra growth in occasional vigorous branches in one part of the plant or another, all of which tend to destroy the otherwise natural form or symmetry of the tree, unless corrected by careful pruning. The much planted and justly popular pepper tree is a notable example of the above, due partly to its soft, yielding wood. On this account, during its first years, cutting back and thinning out of the crown is necessary in addition, to secure bracing of the trunk.

It is justifiable at times to resort to topping in the case of shade trees to induce a denser growth, or where trees have become too tall to be in harmony with their surroundings, though this latter condition is not common in our region of extremely strong light, and sometimes scant supply of plant food. Such pruning, however, should be done with deliberation as to effects desired. Dead or unhealthy branches, or those broken by storms, should be removed speedily, and if necessary the remaining

top or crown reduced sufficiently to insure reasonable uniformity later. Slow growing or unhealthy trees are often encouraged to make vigorous growths by judicious pruning, in connection, of course, with other proper care. Open-headed trees may be made to grow more compact by heading in, while a gradual thinning out of the inner branches corrects trees with too dense or compact heads. Likewise those that are non-symmetrical can be worked into symmetrical trees by removing the abnormal parts, though such treatment is more effective in the earlier training of the plant. As trees get older it becomes necessary to cut out some of the inner branches to open up the crown, thereby overcoming a crowded or brushy appearance, and providing for continued symmetrical development of the tree as a whole. The numerous dead limbs in the centers of even healthy trees are excellent witnesses to this fact.

## HAVE YOU SEEN MASS-O-SPRAY

The New Nozzle that throws a solid cone spray instead of a hollow one? Takes any nozzle's place. Has all the power of the Bordeaux. They all say

"SHE'S A BEAUTY"

Send 75c in stamps or money order for a sample. Regular price \$1.00. "Munyah" if not satisfied. But we are dead safe there. You will be! Say! Don't forget we have some other brand-new things, too. Write! Agents wanted.

**CROWN SPECIALTY COMPANY**  
BOX 297, CHICAGO, ILLINOIS

# F. W. BALTES & COMPANY



The System  
under which  
we operate  
our business

—universally recognized  
as one of the most efficient  
ever devised—coupled with  
our excellent and modern  
exuipment, skillfully man-  
aged, enables us to produce  
expeditiously & accurately

**Superior Work at a  
Minimum of Cost**

PORTLAND, OREGON

## Printers

## BOOKLETS & CATALOGUES ADVERTISING STATIONERY

### To the Shrewd Business Man

A commercial orchard is a good income producer while you live, the best real estate agent you ever had when you are ready to sell, and a valuable asset to leave to your widow and orphans when you have reached the end of life's journey.

If an old reliable nursery is of any specific importance to the prospective planter, we kindly ask you to consider with us before buying your trees.

**Albany Nurseries**

(Inc.)

ALBANY, OREGON

### OFFICERS AND COMMITTEES OF WESTERN FRUIT JOBBER ASSOCIATION OF AMERICA THIS YEAR

Officers—John M. Walker, president, Denver; R. H. Pennington, first vice president, Evansville, Indiana; J. E. Stewart, second vice president, St. Louis; E. H. Emery, third vice president, Ottumwa, Iowa; W. M. Roylance, treasurer, Provo, Utah; W. D. Tidwell, secretary, P. O. Box 1325, Denver; W. H. J. Kavanaugh, sergeant-at-arms, Chicago.

Board of Directors—John M. Walker, Denver; W. M. Roylance, Provo, Utah; C. G. Trimble, Omaha; J. E. Stewart, St. Louis; C. A. Kerr, Chicago; Elwood H. Royer, Des Moines, Iowa; E. H. Emery, Ottumwa, Iowa; Ross A. Gamble, Minneapolis; Samuel E. Lux, Topeka, Kansas; C. B. Bills, Sacramento, California; R. H. Pennington, Evansville, Indiana.

Executive Committee—John M. Walker, Denver; Samuel E. Lux, Topeka, Kansas; R. H. Pennington, Evansville, Indiana; E. H. Emery, Ottumwa, Iowa; C. G. Trimble, Omaha.

Advisory Committee on Transportation Questions—George H. Fleischman, chairman, Topeka, Kansas; J. E. Stewart, St. Louis; R. H. Jones, Kansas City; Gus Homan, Chicago; F. B. McKev-

itt, Sacramento, California; T. A. Cargill, Houston, Texas; R. A. Gamble, Minneapolis.

Membership Committee—Charles Gerber, chairman, St. Louis; Carl Piowaty, Chicago; Jac Stich, New Orleans; John H. Hile, Louisville; T. Pearson, Portland, Oregon.

Arbitration Committee—Joseph Grainger, chairman, Lincoln, Nebraska; H. G. Streight, Omaha; M. L. Dolan, Grand Island, Nebraska.

Legislative Committee—Samuel E. Lux, chairman, Topeka, Kansas; C. B. Bills, Sacramento, California; J. H. Russell, St. Louis; E. H. Royer, Des Moines, Iowa; A. A. Jackson, Dallas, Texas; A. B. Middleswarth, Denver; W. L. Wagner, Chicago.

Committee on Standard Grades and Packages—N. G. Gibson, Chicago.

Committee on Rules and Regulations for Handling and Shipping Watermelons—H. L. Griffin, chairman, Ogden, Utah; R. H. Pennington, Evansville, Indiana; J. H. Hensley, Denver; Roy Campbell, San Antonio, Texas; D. W. Longfellow, Minneapolis.

### LINDSAY & CO. LTD. Wholesale Fruits

HELENA, MONTANA

*Established in Helena Quarter of a Century*

Branch houses: Great Falls, Missoula and Billings, Montana

### Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

## PEACHES APPLES AND PEARS

Solicit Your Consignments

*Reliable Market Reports Prompt Cash Returns*

### Rogue River Fruit and Produce Association

Packers and Shippers of  
Rogue River Fruit

Finest flavored—Longest keepers

PEARS

APPLES

Bartlett

Newtown

Howell

"Autocrat of the  
Breakfast Table"

Bosc

Spitzenberg

Anjou

Jonathan

Comice

Ben Davis

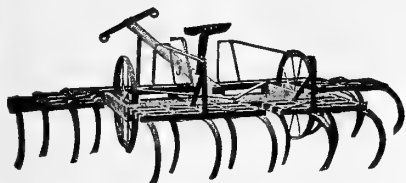
Winter Nelis

**TWELVE SHIPPING STATIONS**

Modern Economy Code

**K. S. MILLER, Manager**

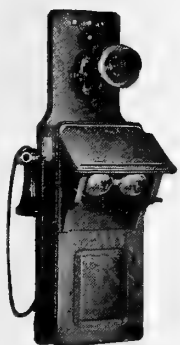
## ORCHARD CULTIVATOR



THE FORKNER LIGHT DRAFT HARROW

is the only perfect light-running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. With this harrow one team can easily do the work of two teams with ordinary harrows. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3½ feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expense one-half, even if you have but five or ten acres of orchard. Write today for prices. LIGHT DRAFT HARROW COMPANY, Marshalltown, Iowa.

## The Ring of Your Telephone



Today is a part of your life. You answer as you do the knock on your door.

It lifts the latchkey of your neighbor, though he be miles away by the highway.

It aids you in fire and accident—saves time and money.

But it must be a reliable, efficient telephone.

Get the best telephone made—it's good economy—experience proves it.

Kellogg telephones and systems are known as standard apparatus everywhere.

Write to us for information and prices. Farm telephone bulletins mailed on request.

**KELLOGG SWITCHBOARD AND SUPPLY CO.**

Chicago

Manufacturers of Standard Telephone Equipment



## The Right Paint For This Spring

You can't afford to let your house stand exposed till oil drops in price. The way things look now, the buildings would be paint-hungry before that time comes.

Get the cost of 100 pounds "Dutch Boy Painter" White Lead, 4 gallons pure linseed oil, 1 gallon turpentine, 1 pint turpentine drier—this makes 8 gallons of pure white lead paint. Divide by 8 for the price per gallon and compare this with the price of any other paint you'd think of using.

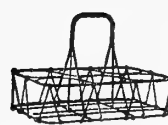
You'll find that the best is the cheapest; also that, after all, the increase in the cost of "Dutch Boy Painter" White Lead made-to-order paint is trifling.

Write for our free "Helps No. 430  
It answers all paint questions."

**NATIONAL LEAD COMPANY**

An office in each of the following cities:

New York Boston Buffalo Cincinnati Chicago  
Cleveland St. Louis San Francisco  
(John T. Lewis & Bros. Company, Philadelphia)  
(National Lead & Oil Company, Pittsburgh)



## Milk Cans That Wear

Milk Cans made of tinned steel plate. The kind that are inspected after every operation while in process of manufacture. The kind that stand the wear and tear and give satisfaction—the best. We are agents for both the **STURGES** and the **BUHL MILK CANS** because these makes are known to make good.

Send for special booklet.

**MUNROE & CRISELL**

Selling Agents

Portland, Oregon



## THE GROWING OF EVERGREENS FROM THE SEED

BY PROFESSOR B. O. LONGYEAR, COLORADO AGRICULTURAL COLLEGE

A NUMBER of persons in Colorado are interested in the growing of forest and shade trees from seed for planting on the farm or around the home. To those who contemplate undertaking such work during the coming spring Professor B. O. Longyear of the Colorado Agricultural College gives a few simple directions.

Most of the native evergreens can be quite readily grown in ordinary good garden soil, especially if somewhat sandy. Seeds may be planted about the same as onion seed, in carefully prepared beds, which should have some slight shelter from drying winds and too hot sunshine.

For growing a few hundred seedlings a bed four by six feet should suffice. Boards ten inches wide, set on edge around the bed, will offer good shelter from severe winds and will give support to a screen of lath or brush, which is often desirable in growing these seedlings. The seeds may be covered with about one-fourth to one-half inch of finely pulverized, sandy soil. The larger the seeds the deeper they should be covered. The seeds may be sown in drills about six inches apart, putting seeds one inch apart in the rows. This facilitates the matter of weeding and cultivating them, which must be done by hand. Firm the soil down with a piece of board and water with a sprinkling pot whenever it becomes dry. When the young seedlings appear considerable care is necessary to prevent the soil from becoming too moist on the surface, although it should not be allowed to dry out below. This is best managed by watering the plants only during the middle of the day, so that the surface

will have an opportunity to dry off. Keep the seed bed perfectly free from weeds, and during the hottest days a slight shading by means of an open lath screen or brush laid across the seed bed frame will be desirable. Most evergreens grow very slowly at first, and will not be ready to plant out in nursery rows until two years old.

In the autumn of the first year, after the growing season is past, it is well to mulch the little trees with dead leaves or fine straw, but do not allow the mulch to pack down onto them, which will often lead to smothering. The seedlings should be grown in the seed bed during the second season, but will require less shading than during the first year. On cloudy, damp days no shade whatever should be given, and in the case of the yellow pine very little, if any, shade is needed during any period of the growth of the trees.

The little trees may be transplanted into nursery rows the beginning of the third growing season. They should be set eight or ten inches apart, in rows two feet apart, where they may be cultivated the same as a crop of corn for two or three years more, when they should be large enough to transplant into permanent quarters.

Great care should be exercised in all cases in transplanting evergreens to avoid drying of the roots. The growing of evergreens in this way is rather particular work, and should not be undertaken unless one has the time and patience to give the best of care and wait for results. Otherwise it is usually cheaper and better to buy the nursery grown stock.



## NIAGARA BRAND Lime-Sulphur Spray

TIME FOR SECOND SPRAYING  
THE CALYX SPRAY

### Niagara Brand Lime-Sulphur

has proven to be the very best calyx spray  
ever put on the market.

### CALYX SPRAYING

is of great importance. It must be done at  
just the right time—as soon as the blossoms  
fall.

Be sure of a fine crop of Apples—Use  
NIAGARA BRAND LIME-SULPHUR  
SPRAY as a calyx spray—now.

Write for interesting booklet of import-  
ant information, "Successful Spraying."

We are agents for the famous Bean  
Spraying Machinery. Niagara and Triangle  
Brands of Arsenate of Lead are the very  
best.

## HOOD RIVER SPRAY MANUFACTURING CO.

P. O. Box 74A Hood River, Oregon

# LOOK!

Into the splendid advantages offered in MOSIER,  
OREGON, before deciding on a location in any other  
apple country.

MOSIER is six miles east of Hood River, on the  
main line of the Oregon-Washington Railroad and Navi-  
gation Company and on the Columbia River.

MOSIER has the same splendid climate, the same  
kind of marketing facilities, and received the same prices  
for apples and other fruit as Hood River.

MOSIER land may be had for from \$50 to \$150 per  
acre raw, and equally low prices for improved.

Address or see

D. D. HAIL, MOSIER, OREGON

No trouble to answer questions.

**ACID BLAST  
ETCHED PLATES**  
*We have installed  
the only etching  
machines in the  
State of Oregon*  
*Blast etched cuts  
have a printing  
quality which has  
never before been  
obtainable with  
process engraved  
plates . . . .*  
**THEY COST THE SAME  
AS THE OTHER KIND**

**WE MAKE  
CUTS  
THAT PRINT**

**HICKS-CHATTEN  
ENGRAVING CO.**  
607 BLAKE-McFALL BLDG., PORTLAND, OREGON

## Nursery Stock of Absolute Reliability

That's the only kind to buy. Good trees bring success  
and poor trees failure. Fruit growers know this. They  
do not experiment. They buy non-irrigated, whole root,  
budded trees, and we number scores of them on our list  
of well pleased customers. We have prepared this season  
for an immense business. That means trees, trees, trees  
without limit as to variety and quantity. We also have  
an immense stock of small fruits and ornamentals. We  
solicit your confidence, and will take care of the rest.  
Catalogue on application.

Salem Nursery Company, Salem, Oregon

Reliable and live salesmen wanted.

# STUDIES FOR THE STUDENTS OF POLLENATION

BY PROFESSOR C. I. LEWIS, AGRICULTURAL COLLEGE, CORVALLIS, OREGON

FOR nearly five years the department of horticulture at the Oregon Experiment Station has been conducting pollination studies of the apple and pear. In February, 1909, we published Bulletin No. 104, giving the results of our work up to that time.

Since publishing Bulletin No. 104 we have been conducting extensive experiments. For the past two years Mr. E. J. Kraus, who has charge of my research work in horticulture, has been co-operating with myself, and we have arrived at certain definite conclusions, presented in this article.

The fruit grower is not much interested in the technique of pollination, but to those who wish to take up this work I will state in brief that you cannot be too careful. The emasculation of the anther must be done before the blossoms open. The blossoms should be carefully covered with paper bags until fecundation has taken place. Pollen can be nicely ripened by picking the twig a little early and placing in fruit jars in a warm place. The anthers can soon after be gathered and placed in a dish in a warm room, and after ripening the pollen can be collected. A little camel's hair brush is as good as anything to use in transferring the pollen.

It has been thought by many fruit growers that pollen was transmitted through the air by means of strong winds and air currents. Our work here shows that this is not the case. We have found that very little pollen of either the apple or pear is transferred in the air currents. Our best friend in the pollination work is the bee. Flying from flower to flower, they transfer the pollen with good results. They are attracted to the flowers by the bright colored petals. We demonstrated that were the petals removed few bees would be attracted to the tree. In one case only five apples set out of fifteen hundred blossoms that had the petals removed. Very few bees visited the tree. Fruit growers cannot emphasize too strongly the necessity and desirability of having bees in the vicinity of the orchard.

In taking up our pollination studies our main aim and desire was to find the cause of sterility. In determining this cause we have worked on many problems of vital interest to the growers, such as a list of the sterile and self-fertile varieties, the mutual affinity of these varieties and the relation of the pollen to the seedling fruit, etc. Our first step was to determine what varieties were sterile and what were fertile. By the word sterile we mean fruits that do not set fruit with their own pollen. By self-fertile we mean fruits which set good profitable fruit with their own pollen. We have worked with eighty-seven varieties of apples and a large number of pears to determine their sterility and their fertility.

The following table gives the results of this study as it concerns the apple:

## SELF-STERILE AND SELF-FERTILE VARIETIES

Variety	No. Bags	No. Set Hand Pollen	No. Set Bag Pollen	Total Fruits Set	Pollen Bearers
Arkansas Black	100	None	None	None	Medium
Autumn Sweet	50	None	None	None	Medium
Baldwin	200	5	9	14	Medium
Bailey Sweet	100	17	6	23	Medium
Ben Davis	100	2	1	3	Medium
Bethlehemite	50	4	6	10	Abundant
Beitigheimer	50	None	None	None	Shy
Bellflower (yellow)	50	None	None	None	Medium
Bottle Greening	50	None	None	None	Medium
Kennedy Sweet	50	None	None	None	Medium
Canada Reinette	50	None	None	None	Abundant
Colvert	100	5	2	7	Shy
Canada Red	50	1	None	1	Medium
Delaware	100	None	None	None	Medium
Domine	100	None	None	None	Medium
Dutch Mignonette	50	None	None	None	Medium
Ewalt	100	None	None	None	Abundant
Early Strawberry	50	None	None	None	Abundant
Fall Wine	100	9	14	23	Shy
Fallowater	100	None	None	None	Medium
Fall Jeneing	100	2	1	3	Shy
Great Bearer	100	None	None	None	Medium
Grimes Golden	100	11	3	14	Shy
Gravenstein	50	None	None	None	Shy
Golden Sweet	100	None	None	None	Medium
Gano	50	None	None	None	Abundant
Green Sweet	100	None	None	None	Abundant
Hoovers Red	50	None	None	None	Medium
Haas	100	None	None	None	Abundant
Holland Beauty	50	None	None	None	Abundant
Holland Pippin	100	None	None	None	Abundant
Hydes Keeper	50	None	None	None	Medium
Handwell Souring	50	None	None	None	Abundant
Jonathan	200	None	None	None	Medium
Jewetts Red	50	1	2	2	Medium
King of Tompkins County	100	None	None	None	Abundant
Keswick Codling	50	24	16	40	Shy
Longfellow	100	13	14	27	Abundant
Limber Twig	100	None	None	None	Medium
May	100	None	None	None	Abundant
Melon	50	None	None	None	Medium
McMahon White	100	None	None	None	Shy
Melon Sweet	50	None	None	None	Medium
Munson Sweet	50	None	None	None	Shy
Maiden's Blush	100	None	None	None	Medium
Missouri Pippin	50	None	None	None	Medium
Mammoth Black Twig	100	None	None	None	Abundant
Mann	100	2	None	2	Abundant
Montreal Beauty (crab)	100	None	None	None	Medium
Newtown	100	41	25	66	Medium
Ortley	100	None	None	None	Medium
Oldenberg	100	3	2	5	Medium
Paradise Sweet	100	None	None	None	Medium
Pumpkin Russett	100	8	8	16	Medium
Pryors Red	50	2	None	2	Abundant
Pewaukee	50	None	None	None	Medium
Red Golden Pippin	50	None	None	None	Medium
Rambo	100	1	1	2	Shy
Romanite	100	None	None	None	Abundant
Rome Beauty	100	None	None	None	Abundant
Red Cheeked Pippin	100	None	None	None	Medium
Ralls	100	None	None	None	Medium
Rhode Island Greening	100	None	None	None	Medium
Sweet Bough	50	None	None	None	Medium
St. Lawrence	100	None	None	None	Medium
Stark	100	1	None	1	Medium
Salome	100	None	None	None	Medium
Scotts Winter	100	20	17	39	Medium
Summer Queen	100	None	None	None	Abundant
Shiwassee	100	11	12	23	Shy
Summer Pearmain	50	None	None	None	Shy
Steels Red	50	None	None	None	Medium
Spitzenberg	100	3	4	7	Medium
Talmans Sweet	100	None	None	None	Abundant
Transcendent (crab)	100	None	None	None	Shy
Trumbull Sweet	100	None	None	None	Abundant
Twenty Ounce	100	None	None	None	Abundant
Wagener	50	2	1	3	Abundant
Western Beauty	50	None	None	None	Shy
Washington	50	5	2	7	Medium
White Pippin	100	11	15	26	Shy
Willow Twig	50	1	1	2	Medium
Wealthy	50	None	None	None	Medium
Whitneys Crab	100	1	3	4	Medium
Winesap	100	None	None	None	Shy
York Imperial	100	None	None	None	Abundant
Yellow Transparent	25	1	1	2	Shy

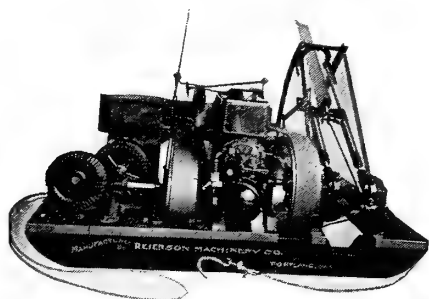
Table gives fertile and sterile varieties, and also their pollen-bearing qualities.

The following is a list of the sterile varieties: Autumn Sweet, Arkansas Black, Beitigheimer, Bellflower, (yellow), Bottle Greening, Canada Sweet, Canada Reinette, Delaware, Domine, Dutch Mignonette, Ewalt, Early Strawberry, Fallwater, Grape Bearer, Gravenstein, Golden Sweet, Gano, Green Sweet, Hoover's Red, Haas, Holland Pippin, Holland Beauty, Hydes Keeper, Handwell Souring, Jonathan, King of Tomp-

kins County, Limber Twig, May, Melon Sweet, Munson's Sweet, Maiden's Blush, Montreal Beauty, Missouri Pippin, Ortley, Paradise Sweet, Pewaukee, Red Golden Pippin, Red Cheeked Pippin (Monmouth Pippin), Romanite, Rome Beauty, Ralls, Rhode Island Greening, Sweet Bough, St. Lawrence, Salome, Summer Queen, Summer Pearmain, Talmans Sweet, Steel's Red, Transcendent Crab, Trumbull Sweet, Twenty Ounce, Western Beauty, Wealthy, Winesap and York Imperial.



## KING OF THE WOODS



45 CORDS SAWED  
IN ONE DAY

## POWER DRAG SAW

Saves money and backache. Weighs only 1,600 pounds, with 4-horsepower Waterloo engine, water-cooled. Can be operated by one man. Pulls itself forward and backward, up hill or down hill; lots of power and some to spare. Uses only 4 gallons distillate per day, which costs 8½ cents per gallon. Get our descriptive catalogue and prices.

**Reierson Machinery Company**  
PORTLAND, OREGON

WATCH THIS  
SPACE FOR  
CUT OF OUR  
IMPROVED  
POWER SPRAYER

WRITE  
FOR  
PRICES

The following is a list of the self-fertile varieties: Baldwin, Bailey's Sweet, Bethlehemite, Colvert, Fallwine, Grimes Golden, Keswick Codling, Longfellow, Oldenberg (Dutchess of), Pumpkin Russett, Scott's Winter, Shiwassee, Washington, White Pippin, Yellow Newtown.

The following is a list of the partially self-fertile varieties: Ben Davis, Canada Red, Fall Jeneting, Jewett's Red, Mann, Pryor's Red, Rambo, Stark, Spitzenberg, Wagener, Willow Twig, Whitney's Crab, Yellow Transparent.

Concerning this list of partially self-fertile varieties I will state that they are in some cases never fertile. The Spitzenberg apple, for example, set only three apples, none of which were of standard size. One of the chief problems we have

taken up is to find the best pollenizer for the sterile or nearly sterile varieties, such as the Spitzenberg. We have found that a large number of varieties will cross with the Spitzenberg, such as Newtown, Arkansas Black, Jonathan, Baldwin, Ortle, Stark, Black Twig, King of Tompkins County, York Imperial, Delicious.

There were many others, but most of them not of commercial importance in the Northwest.

We have been working out whether or not it was feasible to plant Yellow Newtowns and Jonathans together to see whether these varieties crossed in any way. Our results show that these can be planted together very nicely.

Our next line of work was to take up some self-fertile varieties like the Yellow Newtown and to find if they would be improved by crossing. The first two years we crossed the Yellow Newtown with a large number of varieties, and in both the Hood River district and the Willamette Valley we found the apple was greatly improved by crossing such varieties as Grimes Golden and Ortle. The crossed apples gave a large percentage of fruit set and also gave a better average size than those self-pollinated with Newtown pollen. The work in the Rogue River Valley seems to show that the Newtown was not as greatly improved by crossing with such varieties as Grimes Golden and Ortle. The last two years, however, we have obtained splendid results not only in the Rogue River Valley but elsewhere by crossing the Newtown with White Winter Pearmain pollen. Not only has the Winter Pearmain proved successful on the Newtown, but has done well on all varieties on which we have tried it. This is a fruit of splendid vitality. Not only is this vitality shown in the set of fruit, but also in the seedling of the White Winter Pearmain, which is very strong and sturdy. This leads me to the statement that a variety may have a good influence not only in producing good fruit, but, on the other hand, it may have poor vitality and give negative results. The Ben Davis, of poor vitality, is a poor male parent. Its crosses seem to be lacking in vitality. As example, comparing the vitality of the Ben Davis and Yellow Newtown, we chose the Hubbardson Nonesuch as one of the varieties

we desired to work. When crossing the Hubbardson Nonesuch with the Ben Davis the fruits were inferior and smaller than when we crossed the Hubbardson Nonesuch with the Yellow Newtowns.

Many of the flat apples seem to have a poor influence in crossing, especially with such apples as Maiden's Blush, which would be typical of the class. The Winesap is a poor apple for pollination purposes, producing a small amount of pollen, and in some seasons it seems to be absolutely devoid of pollen. The Northern Spy, on the other hand, is more in the nature of the White Winter Pearmain. It has been a good pollenizer on all varieties on which we have tried it. In most cases we have not produced very marked results in the coloring of



### Read what Hood River says

Hood River, Oregon, Nov. 27, 1909.  
This is to certify that I have used Cooper's Tree Spray Fluids, VI, for killing San Jose scale and found it very effectual.  
G. R. Castner, County Fruit Inspector.

### APTERITE THE SOIL FUMIGANT DESTROYS INSECTS IN THE GROUND

REDUCES LOSSES SAVES PROFITS  
IT WILL PAY YOU TO INVESTIGATE  
Write for 1910 booklet (32 pages)  
Testimony from fruit growers  
everywhere

Agent:

**C. G. ROBERTS**  
247 Ash Street Portland, Oregon  
Sole Manufacturers:  
**William Cooper & Nephews**  
CHICAGO, ILLINOIS

**O'E OLSEN LITHOGRAPH CO.**  
LITHOGRAPHERS  
330 JACSON ST. SAN FRANCISCO

Specimen of  
**CALIFORNIA  
SOUVENIR  
CALENDAR**  
2ND EDITION  
Size 9x27  
LITHOGRAPHED  
BY US  
IN 9 COLORS  
Mailed to  
any address  
in USA or  
Canada for  
10¢ in stamps

1911 MARCH 1911											
5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28
29	30	31									

**O'E OLSEN LITHOGRAPH CO.**  
330 JACSON ST. SAN FRANCISCO

WRITE FOR SAMPLE LABELS

the apple by crossing. Anything which appertains to vegetative vigor is greatly influenced. This includes the seedling, foliage, size and form of fruit; also the number of seeds that are set, and this in turn influences the weight of the fruit. In running over a large number of varieties we found that the increase of seed gives increase in weight of the fruit.

In planting varieties for pollination purposes you must pay attention to the blooming periods, it being desirable to plant varieties which are in full bloom at the same time. This blooming period will vary in the different valleys throughout the Northwest. As a rule you will not get much change in the order of blooming.

The following is a list of the early bloomers: Bethlehemite, Kennedy Sweet, Domine, Early Strawberry, Gravenstein, Grape Bearer, Haas, Handwell Souring, Longfellow, Limber Twig, Montreal Beauty (crab), Oldenberg (Dutchess of), Mann, Oregon Crab, Red Astrichan, Ortley, Stark, Tetosky, Transcendent (crab), Wolf River, Wealthy and Whitney (crab).

The following is a list of the late bloomers: Arkansas Black, Autumn Sweet, Bailey's Sweet, Beitigheimer, Bottle Greening, Ben Davis, Baldwin, Canada Reinette, Canada Red, Charlottenhaller, Colvert, Dutch Mignonette, Delaware, Ewalt, Fameuse, Gano, Fall Jeneting, Green Sweet, Holland Beauty, Hyslop (crab), Holland Pippin, Hyde's Keeper, Hoover's Red, Jonathan, Jewett's Red, King of Tompkins County, Keswick Codling, Kentucky Red Streak, Mammoth Black Twig, Martha (crab), Melon, Missouri Pippin, Melon Sweet, Maiden's Blush, McMahon's White, May, Munson's Sweet, Yellow Newtown, Northern Spy, Pewaukee, Paradise, Prior's Red, Pumpkin Russett, Ralls, Romanite, Rome Beauty, Rhode Island Greening, Rambo, Spitzenberg, Red Cheeked Pippin, Rock Pippin, Salome, Shiwassee, Steel's Red, Scott's Winter, Summer Queen, Sweet Bough, St. Lawrence, Twenty Ounce, Trimball Sweet, Talman Sweet, White Pippin, Washington, Walbridge, Western Beauty, Willow Twig, Wagener, Wine-sap, York Imperial, Yellow Transparent. In planting an orchard one has to con-

sider not only the blooming periods, but also the planting in large blocks. As a rule plant from four to six rows of a variety. This is better than alternating varieties when we consider the cost of maintaining an orchard, especially during picking, spraying, etc.

Concerning the relation of pollination to color will state that we have been able to detect very few instances where much change of color was shown, the changes being more or less along the vegetative line, such as vigor of seedling, size, etc., which would in turn change the vigor in the twigs, foliage, wood, etc. The seedling of a White Winter Pearmain in contrast with the Ben Davis are extremely marked.

We make from these studies on earth some vital problem along vitality of fruit trees, and it may be that in the near future we will pay more attention to the seedling for nursery stock as the basis for our investigation. Of all the characteristics of the fruit the first one seems to be affected by pollination in size, this becomes very marked.

In connection with our orchard studies with the flower we have also been conducting bud studies. We have been collecting buds throughout the year and are getting together a large amount of material which will be of great value in pruning, thinning, cause of sterility, etc. Concerning the time in which the flower buds are fully formed we have been unable to complete our laboratory studies of the material collected, but will state that they are certainly formed by the last of August, as all the buds collected at that time show that the fruit buds were formed. How much earlier we cannot state until we complete our laboratory studies, which we hope to do in the near future.

Concerning thinning will state that we have made several observations, especially with the Newtown apple and the Bartlett and Howell pears. We have found that if a pear is thinned from a spur the following season the same spur produces fruit rather than leaf or fruit buds. On yellow varieties of apples and most varieties of pears it would be feasible to allow two specimens to a fruit spur and remove all fruit from the remaining spurs. In this way only one-half the spurs would bear each year.



**T**HE fruit grower or trucker who uses an International Commercial Car "gets there" quicker and more often than the man who uses horses and wagons.

The International makes two to four trips while the horse-drawn vehicle is making one. The man who uses an International goes whenever and wherever he pleases, regardless of road or weather conditions, while the man who uses horses and wagons must wait for good roads and good weather. The

## International Commercial Car

saves work, time, and money, thereby adding to your profits. All in all, considering the matter carefully from every point of view, you will find that you must have an International Commercial Car if you are to attain the greatest profit from your possibilities. Get all the facts—read what the International has meant to others—actual facts and figures, not theories. See the I H C local dealer and inspect one of these cars, or write nearest branch house for catalogues and information.

WESTERN BRANCH HOUSES—Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

INTERNATIONAL HARVESTER COMPANY of AMERICA  
Chicago (Incorporated) USA



## Burpee's Seeds that Grow

140 VARIETIES ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

Stewart Hardware & Furniture Co.

22,000 feet floor space. Hood River, Oregon



C. F. WHALEY  
Originator  
Ballygreen System of  
Certified Pedigree  
Trees

# Important to Planters and Fruit-Growers



H. W. REAUGH  
Graduate  
in Horticulture,  
Field Manager  
Ballygreen Nurseries

Through the **Ballygreen System** of selection and certification we make it possible for planters and fruit-growers to secure clean, hardy nursery stock of proven **quality and pedigree**, propagated from the best trees in the finest orchards of the famous fruit valleys of the West.

It has been our good fortune to secure for the season 1911-12 scions from the following **prize-winning orchards**:

C. H. Sproat, Hood River, Oregon (winner of Sweepstakes prize, Spokane National Apple Show, 1910, and Chicago Apple Show, 1910, best carload of Spitzenbergs).

O. G. France, Wenatchee, Washington (winner of prize for Winesaps, Spokane Apple Show, 1908 and 1910).

Dick Hart, Toppenish, Washington (winner of prize for carload of mixed apples, Spokane Apple Show, 1910).

We have also secured selected strains and varieties from the orchards of Tedford Brothers and Green Brothers, Wenatchee, Washington (winners of plate prizes at Vancouver, B. C., Apple Show, 1910, and at National Apple Show, 1910); J. B. Holt, Pullman, Washington; W. E. Bowes, North Yakima, Washington; Bear Creek Orchards, Medford, Oregon, and others.

Our trees have the **well-balanced roots and tops** that skilled horticulturists aim to secure.

We grow **exclusively**, and are pleased to offer to planters for 1911-12 **Selected Trees of Certified Pedigree**.

## BALLYGREEN NURSERIERS

Please write for price list and pedigree book

HANFORD, WASHINGTON

Undoubtedly the time for bud formation will be influenced by the strength and vigor of the tree; also the variety.

Considering the relation of summer pruning to bud formation will state that our work the past two years shows that where severe summer pruning was practiced until the middle of July instead of producing fruitfulness the fruit buds were turned into leaf buds, or at least fruit bud formation was prevented. At the same season of the year, with light and judicious pruning, we were able to turn the buds which naturally formed leaf or shoot into fruit buds, or at least produced conditions in the tree that brought about the formation of the fruit buds.

Our conclusions on that subject would be that many of the growers are going at summer pruning too blindly and are overdoing the matter in a great many cases. Light summer pruning will have a greater effect on the fruitfulness of your trees. This will mean that we not only have to study the amount of pruning and the exact season of a single variety, but will need to investigate this subject as it concerns each individual variety. Some questions have come up as to just when the rudiments of the floral buds are well advanced.

Yellow Newtowns are well advanced by the first of February; how much earlier cannot be stated, as we have not examined all the material we have collected. This will be definitely concluded in the next two weeks.

Concerning the length of time blossoms will remain receptive after they open, or after emasculation, we know

that they are receptive for one week after blooming. This is a valuable point, as it shows when the bees can work on the blossoms. For scientific purposes the blossoms can be pollinated before they are entirely open.

We have been doing some very interesting work with the pear concerning the sterility and fertility of the leading varieties. Conditions here are much different than those in the East, the Comice being the only variety that is sterile. Bartlett, Winter Nelis and Bosc all will set with their own pollen. We have observed this, however, that pears are greatly improved by cross pollination. It has an influence in producing seed and in a strong degree changes the form of the fruit, especially is this true with the Bartlett and the Bosc. Certain varieties of pears show practically no difference in size and shape of fruit regardless of the pollen used, but the Howell and Winter Nelis are not of this class. Some

## ORCHARDIST SUPPLY HOUSE

FRANZ  
HARDWARE CO.

Hood River, Oregon

### SURPLUS STOCK

We have the following stock in good grades at prices that will please you:

#### APPLE

Baldwin, Bismarck, Black Ben, Delicious, Fall Wine, Gano, Grimes Golden, Hyde King, Jonathan, King David, Ingram, McIntosh Red, Nonesuch, Red June, Rome Beauty, Spitzenberg, Stayman Winesap, Wagener, Whitney, Winesap, Yellow Bellflower, Yellow Newtown and Yellow Transparent.

#### PEAR

Anjou, Bartlett, Comice, Idaho and Winter Nelis.

#### PEACH

Carmen, Champion, Cox Cling, Crawford Early, Crawford Late, Early Charlotte, Elberta, Engalls Mammoth, Fitzgerald, Foreman, Guin, Muir, November, Orange Cling, Phillips Cling, Salway, Slappy, Smock, Triumph and Tuscan Cling.

#### CHERRY

Bing, Black Tartarian, Early Richmond, Eng. Morrilla, Lambert, Late Duke, Oxheart, Royal Ann and Yellow Spanish.

#### PLUM

Bradshaw, Burbank, Damson, Diamond, Grand Duke, Green Gage, Maynard, Wild Goose, Macy and Yellow Egg.

#### PRUNE

Italian, Petite, Silver and Tragedy.

#### APRICOT

Golden, Moorpark, Peach, Tilton and Yakimini.

#### NECTARINE

New White and Boston.

#### NUT TREES

English Walnut, Almond, etc.

#### ORNAMENTAL

Catalpa, Black Locust, Mountain Ash, American Elm, Norway and Silver Maple, Mulberry, and Norway Spruce.

All the above stock clean, hardy and true to name. Write for special spring prices.

THE SUNNYSIDE NURSERY  
COMPANY

SUNNYSIDE, WASHINGTON

### "I HAVE SO LITTLE FUNGUS"

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."  
Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

**PRICES:** In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY

Faculty Stronger Than Ever  
More Progressive Than Ever

Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

**Behnke-Walker** Business College  
PORTLAND, OREGON

## Bee Supplies



We are Western Agents for the A. I. Root Co., the largest manufacturers of bee supplies in the world. Their products are the recognized standard of excellence.

We can therefore equip you with everything for the profitable and successful handling of bees. Pacific Northwest beekeepers should send at once for our Bee Supply Catalog. It lists and illustrates the newest and best things for the apiary. Our stocks are immense.

We supply colonies of pure bred Italian bees hived up and ready for work.

### FRUIT TREES DEMAND BEES

Quantity of fruit is greatly increased; color, flavor and shape improved in orchards pollinated by bees. Our Bee Catalog contains information invaluable to orchardists and demonstrates importance of bees as the chief pollenizing agent.

**Write today for our Special Catalog No203**

**Portland Seed Co.**

Portland : : Oregon

"Diamond Quality" Bee, Poultry, Dairy and Orchard Supplies.  
Plants and Seeds



varieties are injured by this process. The Bosc should not be crossed with the Bartlett, as the fruit so crossed is apt to be small and misshapen, but when crossed with Comice is large and fine. Concerning the best combination to plant with pears will state that the Bartlett and Anjou will do very nicely together. The Winter Nelis and Comice make a splendid combination. Any variety works with the Howell and Bosc does well with everything except the Bartlett. I would suggest that in planting a pear orchard the best plan to follow would be to set from four to six rows in the following order: Bartlett, Anjou, Winter Nelis, Bosc and Howell.

We are conducting experiments not only in Hood River, Rogue River and the Willamette Valley, but also outlined experiments to be conducted in the various sections in the Inland Empire, and within a year hope to publish information for the fruit growers of the Northwest that will be of great value. I shall be very grateful to receive from the growers of Washington any suggestions or observations they have made concerning this important subject of pollination.

◆ ◆ ◆  
**FRUITS FOR NORTHERN OREGON.**—The best dozen kinds of tree, vine and bush fruits for growing in the lower altitudes of Morrow, Wasco, Gilliam, Umatilla, Sherman and Crook Counties, according to Professor C. I. Lewis, of the Oregon Agricultural College department of horticulture, an acknowledged authority on the subject, apples, pears, peaches, cherries, plums, prunes, grapes, strawberries, raspberries, blackberries, currants and gooseberries. "Orchard men in the lower altitudes of these counties," says Professor Lewis, "may safely make their selection for apple growing from the following seven varieties: The Yellow Transparent, Gravenstein, Jonathan, Winesap, Rome Beauty, Wagener, and, for spring use, the Ben Davis or Gano. Practically any commercial variety of pear will grow well here, including the Bartlett, Clapp's Favorite, Seckel, Anjou and Winter Nelis. Any of the standard varieties of the prunes and plums also may be used, such as the Italian, Hungarian and peach plum." The three varieties of sweet cherries recommended by Professor Lewis are the Lambert, Royal Ann and Bing; and a like number of sour cherries—the Early Richmond, English Morello and Olivette—are also named. But four peach varieties are recommended for the district—the Alexander, Early and Late Crawford and the Lemon Cling. "European varieties of grapes, such as the Muscat, Black Hamburg, Tokay and Rose of Peru, are generally covered in winter for protection," says Mr. Lewis. "American varieties which may be grown profitably here are the Worden, Concord, Niagara and Delaware. Clark's seedling is the best strawberry for these altitudes, though practically any of the early, medium or late varieties would yield a good family supply. The four raspberries I would recommend are the Cuthbert, Gregg, Marlboro and Cumberland. Lawton, Eldorado and Kittatinny blackberries; Fay, Cherry and White Grape currants, and Red Jacket, Champion and Industry gooseberries may also be grown well in the lower parts of the North-Central Oregon district."

◆ ◆ ◆  
*Editor Better Fruit:*

We consider "Better Fruit" the most valuable paper issued for the fruit grower and dealer, and we highly recommend the same to all fruit growers. Your truly, F. A. Hihn Company, Santa Cruz, California.

◆ ◆ ◆  
*Editor Better Fruit:*

I look for the arrival of your paper each month, and enjoy every page of it. I wish it came once a week instead of once a month. Yours very truly, Harvey Thorner, Pullman, Washington.

◆ ◆ ◆  
*Editor Better Fruit:*

I am much pleased with "Better Fruit," and must say that it should be a great help to the fruit growers in your section. Yours truly, Arthur Pugh, Madison, Wisconsin.

◆ ◆ ◆  
*Editor Better Fruit:*

Your beautiful publication came to us today. It is a credit not only to your section of the country, but to the whole country. With the personal high regards of the writer, Emory C. Cook, Baltimore.



## Every Deming Sprayer Gets a Hard Test in Our Factory

We know, just as you do, that you can't afford to take any chances when you commence to spray your trees. The loss of a day, or even a few hours, when conditions are just right, may mean hundreds or thousands of dollars' loss to you, and such delay might occur at any time—often **does**, in fact—when an ordinary spray pump is used. That's why, every time we finish a

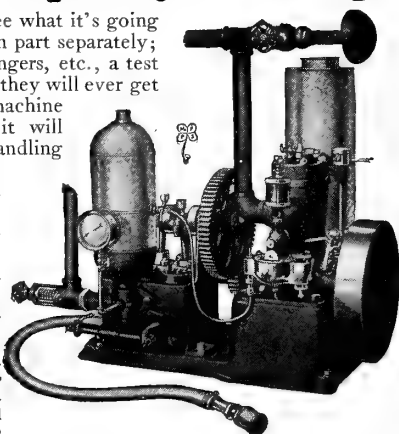
## Deming Spray Pump

we give it a *hard* test to see what it's going to do. We first try out each part separately; then we give cylinders, plungers, etc., a test under heavier pressure than they will ever get in actual use. Before the machine leaves us, we *know* that it will endure a lot more hard handling than you're likely to give it.

If such careful methods appeal to you, we'd like to send Catalogue and quote prices.

Order from your local dealer or from us if he doesn't handle. Always insist on the **DEMING**.

First prizes were awarded Deming "Century" Barre Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910.



**CRANE CO., Pacific Coast Agents**

Portland, Seattle, Spokane, San Francisco

**THE DEMING COMPANY, Manufacturers, 870 Depot Street, Salem, Ohio**  
Hand and Power Pumps for All Uses

## The Great Many-Purpose Irrigation Machine

It will cut your drainage ditches;  
Stir your soil; Level your land;  
Cut laterals; Cut your sage-brush;  
Throw up dikes and grade roads;  
Pick up dirt—carry it—and drop it  
where you want it.

## 20th Century Grader

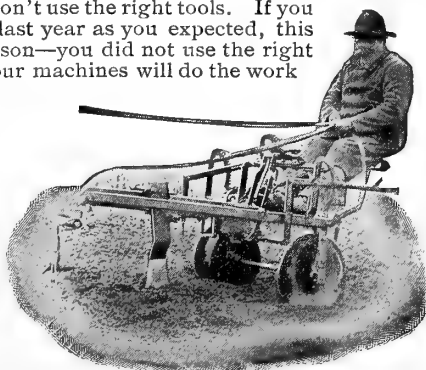
### The Original One-Man Machine

The 20th Century weighs but 600 pounds. One man with two or four horses operates it. Turns in 10-foot circle. Does twice the work of the big, heavy grader with four horses with half the effort.

Mr. Fruit Grower—you can't expect big returns from your work if you don't use the right tools. If you did not do as well last year as you expected, this is probably the reason—you did not use the right tools. If one of your machines will do the work of several expensive ones it means bigger profits at the end of the year.

You shouldn't be without a 20th Century Grader on your place for it has a score of uses.

Let us tell you what others say of it. Send postal for detailed information about these wonderful machines.



**THE BAKER MANUFACTURING CO., 542 Hunter Bldg., Chicago, Ill.**



## Spray Your Fruit for Codling Moth with Grasselli Arsenate of Lead IT IS THE BEST

We are now ready to demonstrate the correctness of our statement from a practical standpoint.

We give you the following names and addresses of the winners of the Grand Sweepstakes prize of \$1,000 for the best car of apples shown at the National Apple Show, Spokane, Washington:

1908—M. Horan, Wenatchee, Washington.

1909—Tronson & Guthrie, Eagle Point, Oregon.

1910—C. H. Sproat, Hood River, Oregon.

All sprayed with Grasselli Arsenate of Lead.

Bear in mind that this material was used at three different points, and during three different seasons. Does this not demonstrate to your satisfaction the superiority of Grasselli Arsenate of Lead, both as to locality and climate in which it may be used?

If so, it will not be necessary to ask yourself the question, "What Arsenate of Lead shall I use this season?" You will order Grasselli Brand.

Do not buy Arsenate of Lead on arsenic contents alone. Bear in mind when buying this spray that lead should be given equal consideration with arsenic, because it increases the adhesive properties and reduces to a minimum foliage injury.

### DISTRIBUTERS IN THE NORTHWEST:

Inland Seed Co., Spokane, Washington  
Hardie Manufacturing Co., Portland, Oregon  
Samuel Loney & Co., Walla Walla, Washington  
Missoula Drug Co., Missoula, Montana  
Western Hardware & Implement Co., Lewiston, Idaho  
Salem Fruit Union, Salem, Oregon  
Hood River Apple Growers' Union, Hood River, Oregon  
C. J. Sinsal, Boise, Idaho  
Yakima County Horticulturists' Union, North Yakima, Washington  
Darrow Bros. Seed & Supply Co., Twin Falls, Idaho  
Rogue River Fruit and Produce Ass'n, Medford, Oregon  
And in all consuming districts.

WRITE THE ABOVE, OR

**H. N. LYON, Northwestern Representative**  
505 Concord Building, Portland, Oregon,  
for name of nearest distributor

### THE GRASSELLI CHEMICAL CO.

Established 1839

Main Office, Cleveland, Ohio

St. Paul, Minnesota.....172 and 174 East Fifth Street  
Chicago, Illinois.....2235 Union Court  
New York City.....60 Wall Street  
St. Louis, Missouri.....112 Ferry Street  
New Orleans, Louisiana.....Godchaux Building  
Cincinnati, Ohio.....Pearl and Eggleston Streets  
Birmingham, Alabama.....825 Woodward Building  
Detroit, Michigan.....Atwater and Randolph Streets



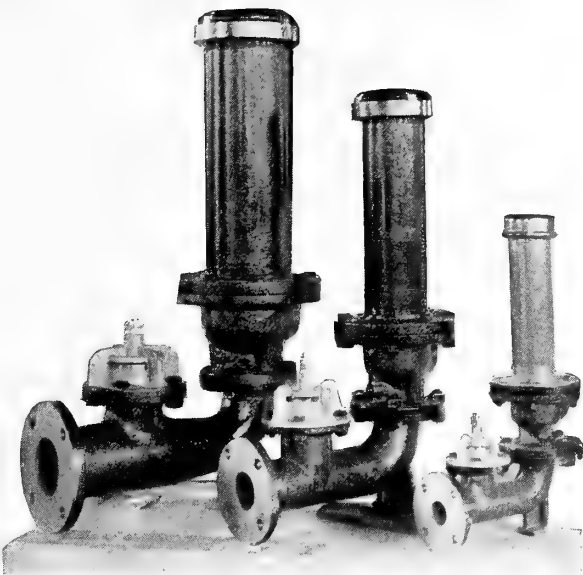
### COLLEGE TO FIGHT ORCHARD PESTS.

A big campaign against the pests which destroy orchards in Oregon is to be started shortly by six experts from the State Agricultural College, in accordance with the legislative bill providing funds for such work. Under the direction of Dean A. B. Cordley, of the college of agriculture; Professor C. I. Lewis, of the horticultural department, and Professor H. S. Jackson, of the entomology department, the college will establish division headquarters in the principal fruit centers of the state—Portland, Salem, Eugene, Roseburg, and perhaps Milton—and from there the investigations will extend over the entire state. This is not the first work of the sort done by the college, though it is the first state-wide campaign against all kinds of pests. Many thousands of dollars have been saved the orchard men of Oregon by the timely advice of the professors. The thirty-five-acre apple orchard of Eisman Brothers, near Grants Pass, was so badly diseased with anthracnose in 1901 that they were about to dig it up. Every tree was diseased with the fungus, and nearly half of the tops were dead or dying. The vitality of the orchard was so low that it did not produce enough apples to pay expenses. Though the owners worked hard cutting dead wood and dead spots the fungus continued to gain on them. They tried a bordeaux mixture spray, suggested by Dean Cordley, in the fall before the leaves were off, with immediate and pronounced benefit. Continued fall sprayings resulted in a production of 10,000 boxes of as fine, clean, healthy four-tier apples four years after as could be produced anywhere in the United States. They sold 7,000 boxes of four-tier Yellow Newtowns and Spitzenbergs at \$1.50 a box and 3,000 boxes of Ben Davis and Vinesaps, giving a gross receipt of \$15,250 from the orchard they had been ready to dig out. William Hellwell, of Yoncalla, Douglas County, had a similar experience with fall spraying for anthracnose, commonly known as "canker," "dead spot" or "black spot." The protection of the rapidly increasing fruit districts of the state from such pests as are already attacking trees here, and from the introduction of new ones through imported stock, is the problem with which the college experts will wrestle. The details of the campaign have not all been completed, but will be ready for announcement shortly.

Editor Better Fruit:

I herewith enclose check for one dollar for the renewal of my subscription to "Better Fruit," and trust that you will continue with even better success in the future than you have been accorded in the past. Yours very respectfully, Wm. Daylano, Minneapolis, Minnesota.

## Irrigation Economy



Means supplying water to your fields at the least cost consistent with an ample supply. If there is a spring or a running stream of water on your place you can utilize the power of this water to pump itself to where you need it. A Phillips Hydraulic Ram does the trick without a particle of attention from anyone after it is once in operation. It doesn't require oiling, even. Simple as can be; not a

**PHILLIPS  
HYDRAULIC  
RAM CO.,**

single spring or any part that can get out of order. This ram is a modern wonder. Low first cost and no operating expense. Send for further information, stating how much water fall you have and the quantity. Give us all the information you can.

419 Lumber Exchange Building, Portland, Oregon

## HOW YOU CAN SECURE AN ORCHARD THAT WILL PAY FOR ITSELF

These orchards are located in the deep volcanic ash fruit soil of the great Columbia River Basin, less than 100 miles from Portland, Oregon, near Mount Hood and the famous Hood River Valley, with railroad depot on the property.

If you are interested, and have a little money, write, today, for full information in regard to this opportunity, the like of which you will not have again soon, and for "How I Can Secure an Orchard That Will Pay for Itself."

### DUFUR DEVELOPMENT COMPANY

91 Third Street

PORTLAND, OREGON

Within the Shadow of Glorious Mount Hood

*Are Grown the World's Most Famous Apples*

Last year the apple crop of Hood River was valued at \$1,000,000.

About 1,000 acres in actual bearing produced this entire crop.

**\$500 per acre is an average yield.**

\$2,000 per acre is an average price for full bearing orchards.

*Clip out and mail now*

**FIVE YEAR**  
Orchards on  
easy payments  
for  
**\$500 per acre**

Hood River District Land Co., Hood River, Oregon.

Sirs: Please send me information regarding your easy payment plan of purchasing orchards.

Name .....

Address .....

## THE GROWING OF DEWBERRIES IN COLORADO

BY W. PADDOCK, COLORADO AGRICULTURAL COLLEGE

THE average person scarcely knows what a dewberry is, yet the fact remains that a few are making comfortable incomes from small plantations of this fruit.

The dewberry may be likened to an overgrown blackberry, but it grows upon a trailing vine-like cane, instead of the upright cane of the blackberry.

The dewberry is by no means adapted to all situations and localities. It has succeeded best in the higher altitudes, but in locations where apples are considered to be a safe crop. Such surroundings are found in the Plateau Valley, and it is here that the growing of this fruit is becoming a specialty.

While dewberry canes are of trailing habit no trellises need be used. A better plan is to keep the canes cut back to a length of about two feet. They are thus made to assume an upright form, and a vigorous plant has the appearance of a thrifty low-growing bush. At the first pruning the new canes are tipped when they are twelve to eighteen inches in length. Just before the picking season begins the canes are pruned a second time, and this consists in cutting back the laterals to a length of about two feet. The following spring the plants are gone over a third time, when the old canes are removed and the vigorous laterals are shortened.

Winter protection is afforded by throwing a few shovelfulls of earth over each of the hills.

When grown in this manner the plants are commonly planted five feet apart each way. The cultivation and irrigation do not differ from that of raspberries.

The dewberry is very perishable, therefore extreme care must be exercised in picking and marketing. The berries must not be exposed to the sun after being picked, and over-ripe fruit will not bear transportation. After the berries have been packed the crates must be placed in a cool place, where they may be dried to a slight extent by a free circulation of air. The car in which they are shipped must be thoroughly ventilated. Iced cars only increase the liability to mold.

A dewberry plantation in good bearing will yield from three hundred to four hundred crates of berries per acre. The average price has been \$2.25 per crate at the shipping point. Assuming the cost of production to be \$1.25 per crate, a very high estimate, there remains a profit \$1 on each crate, or a net return of from \$300 to \$400 per acre. As has been intimated, this fruit does not succeed in all locations, neither would all men be adapted to the management of a five-acre plantation. Consequently there would appear to be small danger of the business ever being overdone. Particularly is this true of a crop of such perishable nature. Dewberry growing, therefore, offers a certain income to the few who will choose proper locations, and who are adapted to the work.

Editor Better Fruit:

I have just finished my first copy—February, 1911—and it looks good to me. Yours truly, A. R. Joyce, Salt Lake City, Utah.

### Free Trip to Denver, Colorado, Any Time During Year 1911

To inspect The Altura Farms Company's 5, 10 and 20-acre irrigated tracts adjoining Denver.

#### FRUIT, VEGETABLE AND POULTRY TRACTS

Sold 237 of these tracts in past year. Ask us for book, also say you want an order for the transportation; both will be sent you free of cost.

We absolutely have the best acreage proposition on the market.

Ask your banker to look us up.

**THE ALTURA FARMS COMPANY**  
210 Ideal Building, Denver, Colorado

## Better Farming A John Deere Book

—Just Out

A Farmer Can  
Get It Free

THIS valuable book has eighteen articles on live farm topics, written by the highest authorities. Get the book and a full description of John Deere Plows and Cultivators. They are the implements of quality, made for farmers who want the best. We will send the book and catalogue of John Deere goods if you write for

Package No. 46

Mention the package number sure, then you will get exactly the right stuff.

**DEERE & COMPANY, MOLINE, ILL.**

## The PARIS FAIR

Hood River's largest and best store

**DRY GOODS  
SHOES, CLOTHING**

We are offering some extra specials in our Clothing Department. Ask to see them.

Try a pair of American Lady \$3 and \$3.50 Shoes, or American Gentleman \$3.50 and \$4 Shoes

## HEMINGWAY'S

Is the lead arsenate of the expert fruit grower. It is widely used in all of the famous fruit growing districts. Made in a factory which has specialized in arsenical manufactures for over 30 years, it has the advantage of this long experience in its preparation for the use of the discriminating fruit grower.

## Hemingway's Arsenate of Lead

### THE PERFECT PRODUCT

Possesses miscibility with maximum sticking power. Is 20% stronger than the federal law requires.

Send for booklet giving full directions for the use of Hemingway's Lead Arsenate against all biting insects.

**KERR, GIFFORD & CO.,** Portland, Ore.  
Coast Agents, who carry full stocks

**HEMINGWAY'S LONDON PURPLE CO.**  
LTD.

64-66 Water St., New York

## THE TOOL that SAVES a TOOL

### What Prof. Bailey Says

"The Double Action 'Cutaway' Harrow has been satisfactory. I use it almost continuously on our hard clay land with good results."

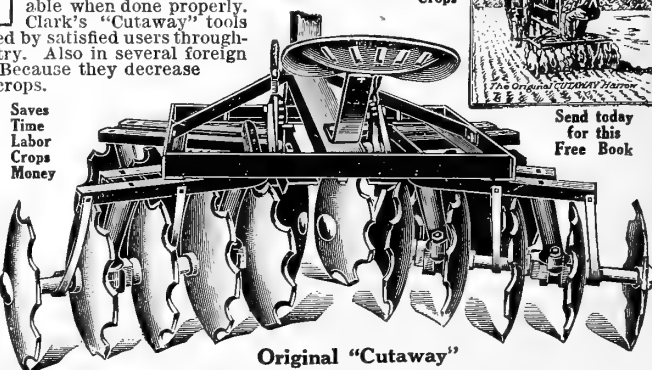
Why buy two tools when one will do two kinds of work and do it better and easier? Clark's original "Cutaway" Harrow can be used as a field harrow and its extension head frame converts it into an orchard harrow. Drawn by two medium horses and will cut 28 to 30 acres or double cut 15 acres in a day. The genuine "Cutaway" disk slices, stirs, lifts, twists and aerates the soil. Working the soil this way lets in the air, sunshines and new life and kills foul vegetation. Thorough cultivation makes large crops. Successful farmers, orchardists, gardeners and planters know that intensive cultivation is profitable when done properly. Clark's "Cutaway" tools

are used and endorsed by satisfied users throughout this entire country. Also in several foreign countries. Why? Because they decrease labor and increase crops.

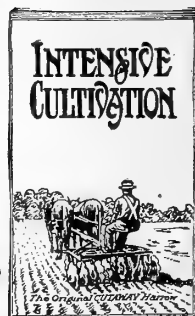
Our disks are made of cutlery steel shaped and sharpened in our own shops and are the only genuine "Cutaway" disks.

Beware of imitations and infringements. We make a tool for every crop. If your dealer can't supply the genuine "Cutaway," write us your needs. Satisfaction guaranteed. Prompt shipments. Send a postal today for our new catalogue "Intensive Cultivation." It's Free.

Saves  
Time  
Labor  
Crops  
Money



Original "Cutaway"



Send today  
for this  
Free Book

**CUTAWAY HARROW CO., 940 MAIN STREET, HIGGANUM, CONN.**

**Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon**

## ANSWERS TO PROBLEMS IN FRUIT GROWING

BY T. F. SMITH, ASHLAND, OREGON

Question 1—What small fruit does best among trees? Answer—Strawberries is the best small fruit one can plant among trees, but should not be grown among the trees longer than four or five years. There are no contagious diseases or insects on the berry plants to be carried to the trees.

Question 2—Does it do to put strawberries among cherry trees? Answer—Strawberries may be planted among cherry trees, and will do as well as they would under any other kind of trees. But if the land has poor drainage the cherry trees will not do so well. (This, however, applies to irrigated land.) Otherwise it is a safe proposition.

Question 3—In caring for strawberries how long should they be watered after the crop is gathered? Answer—The proper way to care for strawberries after fruiting is to cut the tops off close to the crown, let the cutting dry, add enough straw or other litter to the cuttings to cover the row, then set fire to bed. This will destroy rust, fungus and

insects. If your berries are among trees, where you cannot burn the patch over, cut off and remove tops and burn elsewhere, then spray with bordeaux 5-5-50. Immediately after burning the bed should be well irrigated and a thorough deep cultivation given before the new growth starts. The patch should then be kept wet and cultivated enough to keep the weeds down until the fall rains set in. This growing condition will help to keep out the worst enemy the strawberry has—the crown borer.

Question 4—What can I do to keep the worms out of my currants? Answer—Use arsenite, one pound to fifty gallons water; spray after bloom falls. Ten days later use white hellebore, one ounce to three gallons water. If worms persist give them more hellebore.

Question 5—Is it necessary to spray gooseberries and currants? If so, what must I use? Answer—Besides spraying the currant and gooseberry for worms they should be sprayed every spring with lime-sulphur for scale. The gooseberry

should be dusted with dry sulphur just after the bloom falls to prevent mildew. A second application will be necessary if they have been badly mildewed the previous year.

Question 6—In caring for the red raspberry how long should they be headed, and when should this be done? Answer—Three and one-half to four feet is about the right height for heading either red or black raspberries; the time to head the canes is when they grow to that height by pinching off the terminal bud.

Question 7—How green should the raspberry be picked for market? Answer—The berry should be well developed and fully ripe (not over-ripe). It should never be picked when it crumbles in picking, and never picked when hot.

Question 8—What fruit pays best here? Answer—The cherry, peach, apple and pear are each a paying proposition if planted on soil best adapted to the different kinds.

Question 9—What crop should follow a strawberry bed? Answer—Any good hoe crop that will bring the life back to it, that the pickers tramped out in gathering the berries.

Editor Better Fruit:

Here's a dollar bill for another year's subscription to "Better Fruit," to begin with the April issue. Your excellent paper is certainly worth the small subscription price you ask. Yours very truly, W. G. Scholtz, King Hill, Idaho.

#### FRUIT DEALERS THAT ADVERTISE IN BETTER FRUIT EASTERN BUYERS

Gibson Fruit Company, G. M. H. Wagner & Sons, Chicago; Steinhardt & Kelly, D. Crossley & Sons, Sgobel & Day, New York; Lindsay & Co., Helena, Great Falls and Billings, Montana; Lawrence Hensley Fruit Company, Denver; Ryan & Virden Company, Butte, Montana; E. P. Stacy & Sons, Minneapolis; Simons-Jacobs Company, Glasgow, Scotland; Simons, Shuttleworth & Co., Liverpool and Manchester, England; Garcia, Jacobs & Co., London, England; J. H. Lutten & Son, Hamburg, Germany; Omer Decugis et Fils, Paris, France; Simons, Shuttleworth & French Company, New York; Walter Webling, Boston; John Brown, Brighton, Ontario; Ira B. Salomon, Canning, Nova Scotia; William Clement, Montreal; D. L. Dick, Portland, Maine; Crutchfield & Woolfolk, Pittsburg; E. P. Stacy & Sons, Fargo, North Dakota; George Middendorf Company, Chicago; Sam Haines, New York; W. Dennis & Sons, Covent Garden Market, London, England; Bigalow Fruit Company, Cleveland; C. H. Weaver Company, Chicago; W. J. Henry Produce Company, Detroit; Gamble-Robinson Commission Company, Minneapolis; Denney & Co., Chicago; Mound City Ice and Cold Storage Company, St. Louis; Ebner Ice and Cold Storage Company, Vincennes, Indiana; Grinnell, Collins & Co., Minneapolis; The Callender-Vanderhoof Company, Minneapolis; John B. Cancelmo, Philadelphia; Alfred Otis, Boston; The B. Presley Company, St. Paul; Fliegler & Co., St. Paul; Ray & Hatfield, New York; Appel & Ujffy, New Orleans; Sutton Bros., Columbus, Ohio; I. N. Price & Co., Cincinnati; Jacob G. Reuter & Co., Peoria, Illinois.

#### WESTERN BUYERS

Davenport Bros., Pearson, Page & Co., McEwen & Koskey, Mark Levy, Bell & Co., Levy & Spiegl, W. B. Glafke & Co., Dryer, Bollam Company, Page & Son, T. O'Malley Company, Northwestern Fruit Exchange, Portland, Oregon; Ryan & Newton, H. J. Shinn Company, Grant McCann Company, Spokane, Washington; Davidson Fruit Company, Hood River, Oregon; Richey & Gilbert, Toppenish, Washington.

#### FRUIT GROWING AND BEE KEEPING

Learn what an ideal combination it makes. "Gleanings in Bee Culture" tells all about it. Six months' trial subscription 25c. 64-page book on Bees and supply catalog free. THE A. I. ROOT CO., Box 83, Medina, Ohio.

# CREATION



HE who is blessed with the power to create is blessed with God's greatest gift to man, and if he uses that power to increase the happiness of his fellow men he becomes a benefactor to the human race.

The world owes homage to the men who have devoted their burning energies to the consummation of one purpose, to the final and most perfect development of an ideal.

## The Steinway Piano

Is an example of the grand result of years of persistent, purposeful striving after the very highest musical ideal. Sons have taken up the task where fathers left off, so that alternate generations of genius, working through the finest piano factory in the world, have evolved the Steinway—a piano that has long since been acknowledged the musical masterpiece of the ages.

Priced at \$575, \$625, \$775 and up to \$1,600. Of course you can buy a piano cheaper, but it will be a cheaper piano. Why not get the best?

The tone is the Jewel.  
The case is the Setting.  
The combination is the Steinway—the Perfect Piano.

VICTOR TALKING  
MACHINES and  
SHEET MUSIC

Sherman  & Co.

SIXTH AND MORRISON  
PORTLAND, OREGON  
Exclusive Steinway Representatives

A REPUTATION TO SUSTAIN

# The Vineland Nurseries

CLARKSTON, WASHINGTON

Has to offer for Spring Delivery, 1911,  
as complete a line of Nursery Stock  
as can be found in the Northwest

All stock propagated from selected bearing trees.

Experts all over the Pacific Northwest realize that no other nursery exercises greater care than we do, and that

No more reliable stock is grown than we produce.

For fall delivery 1911, and spring delivery 1912, we shall have to offer for the first time the

## RED GRAVENSTEIN

*The New Apple Sensation*

Will tell you more about this wonderful apple, which is purely a fortunate accident of nature, later on.

**THE VINELAND NURSERIES CO.** CLARKSTON WASHINGTON

Owners of The Hanford Nurseries

## For Orchard Cultivation This Harrow Has Made Good

The "ACME" is the only implement you need to follow the plow in any kind of ground. It works either irrigated or dry farms. The sharp, sloping coulters on the "ACME" cut through the sod or stubble turned under by the plow, and do not drag it to the surface. The "ACME" is a perfect weed exterminator and mulcher, and will keep down weed growths in all orchards.

### ACME Pulverizing Harrow, Clod Crusher and Leveler

is also the best Harrow for general farming, and for fitting soil for grains, alfalfa, etc., because the coulters work every inch of the soil, cutting through to the under soil, which other harrows leave lumpy and full of air spaces, pulverizes and then compacts this under soil and leaves the top soil loose. Soil harrowed with an "ACME" will attract and conserve all the moisture for the benefit of the growing crops. Made entirely of steel and iron. In sizes to suit every one—3 to 17½ feet wide. Each and every part guaranteed.

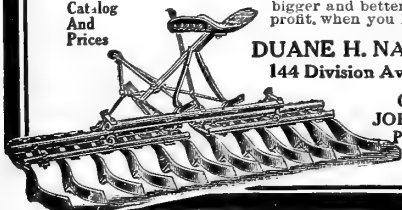
**Keeps Down Weed Growth—Produces Ideal Surface Mulch—No Tree Roots Injured by The Coulters—Branches Not Disturbed by Horses.**

Write for  
Catalog  
And  
Prices

Send for our combined catalog and booklet  
—"Preparation of The Soil," which will mean  
bigger and better growth for you and more  
profit, when you have read it.

**DUANE H. NASH, Incorporated**  
144 Division Ave., Millington, N. J.

GENERAL AGENTS:  
**JOHN DEERE PLOW CO.**  
Portland, Ore., Spokane, Wash.



## HOMER G. DAY LAND ——— INVESTMENTS

Choice  
White Salmon  
Apple Lands  
at  
Reasonable Prices  
in  
Large and Small  
Tracts

**HOMER G. DAY**

Successor to Day Brothers

WHITE SALMON, WASHINGTON



**FIGURES COST PER BOX.**—G. C. Eikelberner takes serious exception to the statement of Peter Hovland as to the cost of producing a box of apples. Mr. Hovland's estimate was 86 cents. His figures were \$300 per acre for interest on the investment, rent, taxes, harrowing, cultivation, fertilizing, spraying, etc., with 36 cents additional for marketing expenses. Mr. Eikelberner in his estimate cuts out the expense of plowing, cultivating and fertilizing, holding that the growing of clover or some other cover crop in the orchard takes the place of fertilizing and makes the orchard more productive. His total estimate is about 61½ cents, divided as follows:

Eight per cent on \$2,000 valuation.....	\$160.00
Water rent .....	1.50
Taxes .....	10.00
Pruning (average).....	5.00
Brush hauling .....	1.00
Spraying .....	10.00
Irrigating .....	5.00

Total.....\$192.50  
Figuring 600 boxes to the acre, this would make a total expense of about 32 cents. Added to the 32 cents are the marketing charges, as follows:

Packing .....	\$0.07
Hauling .....	.01½
Box, nails and making.....	.13
Paper .....	.02
Nailing .....	.01
Orchard hauling .....	.02
Picking .....	.03

Total.....\$0.29½  
This makes a total expense of 61½ cents per box. P. W. Lawrence kept very careful track of his expenses this year and they amounted to 61 cents per box. Other growers have been making a careful estimate for years past, and it is safe to say that the cost of growing and marketing a box of apples ranges between 50 and 60 cents.—Wenatchee World.

#### Editor Better Fruit:

Enclosed find one dollar to your magazine. It is far too good to do without, and is a great credit to the fruit business of the continent. I should like to feel that it was going into the hands of every fruit grower in Canada and the United States. Wishing you further success. Faithfully, Ralph S. Eaton, Kentville, Nova Scotia.

#### Editor Better Fruit:

You certainly edit a live paper. I am enjoying it every month. Yours truly, H. M. Magie, Waynesboro, Virginia.

## THE NORTHWEST ASSOCIATION OF NURSERYMEN

Oregon—Albany Nurseries, Albany; A. Brownell, Portland; Sunnyslope Nursery Company, Baker City; Carlton Nursery, Carlton; A. McGee, Orenco, M. McDonald, Orenco; H. S. Galligan, Hood River; Tune-a-Tune Nursery, Freewater; J. B. Weaver, Union; S. A. Miller, Milton; G. W. Miller, Milton; C. B. Miller, Milton; F. W. Power, Portland; J. B. Pilkington, Portland; C. F. Rawson, Hood River; F. W. Settlemier, Woodburn; F. H. Stanton, Hood River; E. P. Smith, Gresham; W. S. Sibson, Portland; Sluman & Harris, Portland; C. D. Thompson, Hood River; H. A. Lewis, Portland; Sunnyslope Nursery Company Baker City.

Washington—C. J. Atwood, Toppenish; J. J. Bonnell, Seattle; A. C. Brown, R. D. 2, Selah; Ed Dennis, Wenatchee; A. Eckert, Detroit; D. Farquharson, Bellingham; George Gibbs, Clearbrook; W. A. Berg, North Yakima; Interlaken Nursery, Seattle; Inland Nursery and Floral Company, Spokane; Rolla A. Jones, R. D., Hilliard; A. Lingham, Puyallup; G. A. Loudenback, Cashmere; A. W. McDonald, Toppenish; C. Malmo, Seattle; C. McCormick, Portage; W. S. McClain, Sunnyside; T. J. Murray, Malott; G. W. R. Peaslee, Clarkston; Richland Nursery Company, Richland; J. A. Stewart, Christopher; C. N. Sandahl, Seattle; F. K. Spalding, Sunnyside; H. Schuett, Seattle; A. G. Tillinghast, La Conner; Wright Nursery Company, Cashmere; F. A. Wiggins, Toppenish; C. B. Wood, R. D. 2, Selah; C. N. Young, Tacoma; E. P. Gilbert, Spokane; Stephen J. Hermeling, Vashon; Northwest Nursery Company, North Yakima; H. C. Schumaker, Brighton Beach; E. P. Watson, Clarkston; Yakima Valley Nurseries, Toppenish; Yakima-Sunnyside Nurseries, Sunnyside.

California—John S. Armstrong, Ontario; F. X. Bouillard, Chico; J. W. Bairstow, Hanford; Chico Nursery, Chico; Leonard Coates, Morgan Hill; California Rose Company, Los Angeles; California Nursery Company, Niles; Charles A. Chambers,

Fresno; L. R. Cody, Saratoga; R. P. Eachus, Lakeport; A. T. Foster, Dixon; E. Gill, West Berkeley; C. W. Howard, Hemet; William C. Hale, Orangehurst; William Kelly, Imperial; James Mills, Riverside; S. W. Marshall & Son, Fresno; John Maxwell, Napa; C. C. Morse & Co., San Francisco; Fred Nelson, Fowler; Park Nursery Company, Pasadena; George C. Roding, Fresno; Ruehl-Wheeler Nursery, San Jose; Silva & Bergtholdt Company, New Castle; G. W. Sanders, Davis; Scheidecker, Sebastopol; W. A. T. Stratton, Petaluma; R. M. Teague, San Dimas; T. J. True, Sebastopol; J. B. Wagner, Pasadena; W. F. Wheeler, Oakesdale; Edwin Fowler, Fowler; Hartley Bros., Vacaville; Thos. Jacobs & Bros., Visalia.

Alabama—W. F. Heikes, Huntsville.  
British Columbia—F. R. E. DeHart, Kelowna; M. J. Henry, Vancouver; F. E. Jones, Royal Avenue, New Westminster; Richard Layritz, Victoria; Riverside Nurseries, Grand Forks; Royal Nurseries & Floral Company, Vancouver.

Colorado—J. W. Shadow, Grand Junction.  
Idaho—Anton Diedrichsen, Payette; J. F. Littooy, Mountain Home; O. F. Smith, Blackfoot; Tyler Bros., Kimberly; J. C. Finstad, Sand Point; C. P. Hartley, Emmet; J. A. Waters, Twin Falls.  
Montana—Montana Nursery Company, Billings.  
New Hampshire—Benjamin Chase Company, Derry Village.

New York—Jackson Perkins Company, Newark; McHutchinson & Co., New York; Vredenberg & Co., Rochester.

Pennsylvania—J. Horace McFarland Company, Harrisburg.

Tennessee—Southern Nursery Company, Winchester.

Utah—Harness, Dix & Co., Roy; Orchardist Supply Company, Salt Lake; Pioneer Nursery Company, Salt Lake; Utah Nursery Company, Salt Lake; Davis County Nursery, Roy.

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

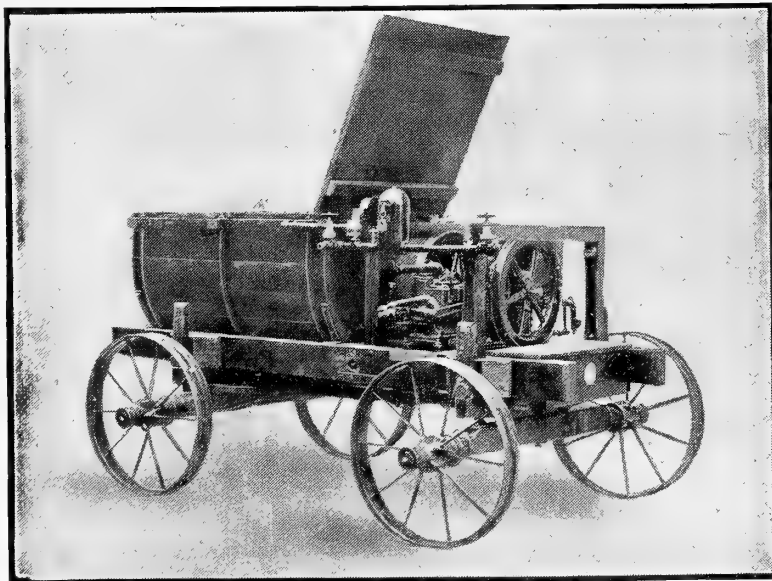
Will have for spring delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDE, Nurseryman

H. S. BUTTERFIELD, President

# NEW POWER SPRAYER

ESPECIALLY CONSTRUCTED TO MEET THE REQUIREMENTS OF THE FRUIT GROWERS OF THE NORTHWEST



After talking with a number of the fruit growers, we have embodied in this Spray Outfit the suggestions which they gave.

The first machines on the market were too heavy (weighing not less than 2,000 pounds). This machine weighs only 1,300 pounds, which is a feature to be considered on hillsides and soft ground.

The machine is built low enough to clear the branches of the trees, being 4 feet 3 inches from the ground. The tank and cover for the engine are so constructed as to serve as a platform for the operator to stand on while spraying down into the calyx. Again it differs from the first machines in that it is very short, being but 4 feet 8 inches wheel base, making it possible to turn short.

This Spray Outfit, with the Fairbanks-Morse one-horsepower engine, direct connected to a special pump designed to give 200 pounds pressure continuously through two hose connections and nozzles from a tank of 150 gallons capacity, appeals to the fruit growers because it embodies every feature they regard as important.

We invite you to investigate this entirely new Spray Outfit. Write for catalog.

**FAIRBANKS, MORSE & COMPANY**  
PORTLAND, OREGON      SEATTLE, WASHINGTON      SPOKANE, WASHINGTON



**BY** A recent decision of the Interstate Commerce Commission the California Fruit Growers' Exchange has established its right to do its own precooling, and where the railroads precool the rate has been reduced from \$30 to \$7.50 a car. When the exchange precools and ships citrus fruits without ice it must assume the responsibility of damage in transit, although the roads are responsible for reasonably prompt service. This case grew out of the fight between the Arlington Heights Fruit Exchange and the railroads, in which the exchange demanded the right to precool its own fruit. The complaints made by the Arlington Heights shippers were that the refrigeration rate of the railroads was excessive, that the railroads' reluctance to ship fruit which was precooled was illegal, and that the rates under which the roads were willing to ship precooled cars were out of reason. While the railroad companies are upheld by the commission in many of their contentions, the bulk of the victory goes to the fruit exchange. In the final analysis of the case, however, the right of the shippers to avail themselves of the precooling system of shipping is established. On this point the report of the commission says:

"Clearly these growers who have devised and perfected this system of shipment should not be compelled to pay for the privilege of using it more than the fair cost to the carrier of providing the additional facilities, which are not included in the ventilated rate, with a fair profit. We are of the opinion that the precooling charge of \$30 per car is unreasonable and that this charge should not exceed \$7.50 per car. It is urged that to allow shippers to precool their own shipments will result in discrimination in favor of the large and against the small shipper, but this is not apparently true under actual conditions at the present time."

The decision is regarded as a body blow to the precooling establishments that have been erected by the Santa Fe and Southern Pacific roads in Southern California. The outcome presents many complicated questions. The exchange, when it does its own precooling, assumes responsibility in transit, the roads only being expected to make reasonable time. In the case of tramp cars, where there are frequently long delays—which delays are caused by the shippers' own orders—it appears that the fruit exchange will have to assume all loss.—The Packer.

**SMALL FRUITS.**—Strawberries may be grown for two cents a quart. I have raised 400 crates per acre, but 200 crates is an average yield. Raspberries may be grown for four cents per quart; yields vary from 60 to 150 crates per acre. Blackberries can be grown cheapest of all—one cent per quart, and yields from 60 to 120 crates per acre. Other fruits may be grown cheaply, such as grapes, gooseberries, currants, cherries, plums, pears, peaches and apples, the latter of which, with a selection from early to later ripening varieties, will of themselves supply fruit nearly the whole year. Raspberries bear the second year after planting. I have tested over twenty-five varieties of the black sort; Kansas and Cumberland lead. Cardinal, nearly purple, yields fairly well; few of the red varieties yield paying crops; would advise planting them only close to a city market. The blackcap raspberries have made me the most money during the past twenty years, and with better markets every year. Blackberries bear the second year after planting. Early Harvest is not as yet excelled by the newly introduced early sorts, and leads for profit. Kittatiny fifteen to twenty-five years ago was in the lead, but of late years it rusts too badly, and I would not plant it. Snyder is hardy; I never knew it to rust or winter-kill. Some new sorts promise well, but it is better to go slow than too fast in planting new varieties. Peaches, pears, plums and cherries will begin to bear the second or third year; mulberries, which begin to bear the second year, should be planted in the poultry yard and cherry orchard, as the birds prefer mulberries to cherries. Apple trees will commence to bear the fourth and fifth years, like other fruits, owing to varieties and care.—Jacob Faith in Colman's Round World.

**COST OF APPLYING WATER.**—The first irrigation on new land is the most difficult and expensive, often costing one dollar or more to the acre. After the banks of the ditches have settled and become firm the average cost is sixty cents an acre. Where three men are needed to manage the irrigation in the spring, but one man is required later in the season. With the ditches in good order and the furrow system established, one can irrigate 100 acres of small grain or 150 acres of alfalfa. From twelve to eighteen hours will be required for the irrigation, and with a head of two second feet water may be running on from six to ten acres at one time. If the system is automatic, but a part of the working hours of the day will be required to look after the irrigation, but when not so arranged constant attention is necessary. When funnels are not used one man can generally irrigate four or five acres a day, but if the ditches are new he can attend to but two or three. The average cost of clearing, preparing land for irrigation, applying water, and the cost of production of two of the leading crops may be summarized as follows, assuming that the automatic furrow system is used and that the alfalfa is sown without a nurse crop: Clearing, \$5; plowing, \$2.50; leveling, 50c; ditching, \$1; seeding, \$2.50; furrowing, 50c; spouts, \$1; irrigating three times, \$2; harvesting one ton, \$2.30; total, \$17.30. Alfalfa the second year: Repairing ditches, 25c; irrigating three times,

\$1.50; harvesting six tons, \$10.80; total, \$12.55. Wheat on second-year land: Plowing, \$2.50; leveling, 50c; seeding, \$2.10; furrowing, 50c; repair of ditches, 25c; irrigating two times, \$1.20; harvesting forty-five bushels, \$5.60; total \$12.70. Flooding is the general practice and furrow irrigation is not employed for small grain or alfalfa. The fields are laid off into long strips 100 to 200 feet wide. These are termed lands and are separated by low levees which confine the water to each strip.—Exchange.

My Dear Rulofson:—The "Hood River" apples reached us in good condition. They were delicious. We enjoyed the flavor of the apples and greatly appreciated the kind remembrance. The old saying, "Out of sight, out of mind," did not apply in this instance.

We made a gastronomical discovery while eating

the red ones. Spitzenbergs, I believe they are called. Here's the discovery: If you take a bite of the apple and at the same time a bite of one of those small French cakes called Macaroons you will find it not only very toothsome, but will notice a delicious farewell flavor similar to the taste of ice cream. It is somewhat like eating a piece of Roquefort cheese with a small particle of Bartlett Pear. Each particle seems to better develop the flavor of the other.

We hope that it will be in the line of probability to have, in the near future, the pleasure of your company at a home luncheon with us. Then, if between the three of us, we do not make some other surprising gastronomical discovery I shall think that we are not "Bon Viviers."

Thanking you very much for the apples, likewise for the remembrance, we remain thy friends, Joe and Harry, San Francisco.



## Come to the Fertile Northwest!

### The Prosperity States of America

Get a home in this Land of Plenty. Make a comfortable living—and a good profit—as thousands are, raising fruits, vegetables, grains, grasses, alfalfa, cattle (or dairying), hogs, poultry, bees.

A healthful, growing climate—land marvelously productive, in irrigated and non-irrigated sections. Free Government land in choice localities. New extensions of the Northern Pacific Railway and its allied lines are opening up rich fields to the Homeseeker. Come now, while you can buy land cheap.

Tell us which state you are interested in, what kind of land you want, and what you want to do. We will send free illustrated booklets and full information about low fares to the Northwest for the Spring and Summer months. Ask for illustrated folder "Through the Fertile Northwest."

Minnesota, North Dakota, Montana, Idaho, Washington, Oregon—here lies your chance—along the Scenic Highway in the Land of Fortune. Don't delay—write today.

A. D. CHARLTON, Ass't G. P. A., Portland, Oregon  
A. M. CLELAND, Gen. Pass. Agent, St. Paul

## Northern Pacific Ry



## ASHLAND DISTRICT of the ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent **free** on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.

## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries,  
Plums, Prunes, Apricots, Grapes  
and Cantaloupes

Mixed carloads start about  
July 20. Straight carloads in  
season. Our fruit is the very  
best grade; pack guaranteed

We use Revised Economy Code



TWO-YEAR-OLD ORCHARD AT PAYETTE, IDAHO, PLANTED WITH OUR YEARLING TREES  
(Owner's name furnished on request)

this kind of tree is plainly evidenced. If you are contemplating the planting of an orchard, plant the tree that brings you results; don't sacrifice satisfaction and dollars for a few cents in the original cost per tree.

Ask for "Descriptive Booklet of Our Plant"—it's free and helpful.

## OREGON NURSERY COMPANY, Orenco, Oregon

# Your Future Orchard

Would you be satisfied if you could get trees that would make YOU an orchard like the accompanying illustration, in just TWO SHORT YEARS after planting? You can, if you will. This is a two-year-old orchard near Payette, Idaho, planted with our one-year-old budded tree having a strong three-year-old root. The superiority of

## NORTHWEST GROWERS' UNIONS AND ASSOCIATIONS

**WE PUBLISH** free in this column the name of any fruit growers' organization. Secretaries are requested to furnish particulars for publication.

### Oregon

Eugene Fruit Growers' Association, Eugene; Ashland Fruit and Produce Association, Ashland; Hood River Fruit Growers' Union, Hood River; Hood River Apple Growers' Union, Hood River; Grand Ronde Valley Fruit Growers' Union, La Grande; Milton Fruit Growers' Union, Milton; Douglas County Fruit Growers' Association, Roseburg; Willamette Valley Prune Association, Salem; Mosier Fruit Growers' Association, Mosier; The Dalles Fruit Growers' Union, The Dalles; Salem Fruit Union, Salem; Albany Fruit Growers' Union, Albany; Coos Bay Fruit Growers' Association, Marshfield; Estacada Fruit Growers' Association, Estacada; Umpqua Valley Fruit Growers' Association, Myrtle Creek; Hyland Fruit Growers of Yamhill County, Sheridan; Newberg Apple Growers' Association, Newberg; Dufur Valley Fruit Growers' Union, Dufur; McMinnville Fruit Growers' Association, McMinnville; Coquille Valley Fruit Growers' Union, Myrtle Point; Stanfield Fruit Growers' Association, Stanfield; Oregon City Fruit and Produce Association, Oregon City; Lincoln County Fruit Growers' Union, Toledo; Rogue River Fruit and Produce Association, Medford; Mount Hood Fruit Growers' Association, Sandy; Northeast Gaston Farmers' Association, Forest Grove; Dallas Fruit Growers' Association, Dallas; Northwest Fruit Exchange, Portland.

### Washington

Kennewick Fruit Growers' Association, Kennewick; Wenatchee Fruit Growers' Union, Wenatchee; Puyallup and Sumner Fruit Growers' Association, Puyallup; Vashon Island Fruit Growers' Association, Vashon; Mt. Vernon Fruit Growers' Association, Mt. Vernon; Spokane Fruit and Vegetable Growers' Association, Spokane; White Salmon Fruit Growers' Union, White Salmon; Thurston County Fruit Growers' Union, Tumwater; Bay Island Fruit Growers' Association, Tacoma; Whatcom County Fruit Growers' Association, Curtis; Yakima Valley Fruit and Produce Growers' Association, Granger; Buckley Fruit Growers' Association, Buckley; Lewis River Fruit Growers' Union, Woodland; Yakima County Horticultural Union, North Yakima; Evergreen Fruit Growers' Association, R8, Spokane;

Lake Chelan Fruit Growers' Association, Chelan; Zillah Fruit Growers' Association, Toppenish; Kiona Fruit Growers' Union, Kiona; Mason County Fruit Growers' Association, Shelton; Clarkston Fruit Growers' Association, Clarkston; Prosser Fruit Growers' Association, Prosser; Walla Walla Fruit and Vegetable Union, Walla Walla; The Ridgefield Fruit Growers' Association, Ridgefield; The Felida Prune Growers' Association, Vancouver; Grand View Fruit Growers' Association, Grandview; Spokane Valley Fruit Growers' Company, Spokane; Goldendale Apple Growers' Union, Goldendale; Yakima Valley Fruit Growers' Association, North Yakima; Southwest Washington Fruit Growers' Association, Chehalis; The Touchet Valley Fruit and Produce Union, Dayton; Lewis County Fruit Growers' Association, Centralia; The Green Bluffs Fruit Growers' Association, Mead; Garfield Fruit Growers' Union, Garfield.

### Idaho

Southern Idaho Fruit Shippers' Association, Boise; New Plymouth Fruit Growers' Association, New Plymouth; Payette Valley Apple Growers' Union, Payette; Parma-Roswell Fruit Growers' Association, Parma; Weiser Fruit and Produce Growers' Association, Weiser; Council Valley Fruit Growers' Association, Council; Nampa Fruit Growers' Association, Nampa; Lewiston Orchards Producers' Association, Lewiston; Boise Valley Fruit Growers' Association, Boise; Caldwell Fruit Growers' Association, Caldwell; Emmett Fruit Growers' Association, Emmett; Twin Falls Fruit Growers' Association, Twin Falls; Weiser River Fruit Growers' Association, Weiser.

### Colorado

San Juan Fruit and Produce Growers' Association, Durango; Fremont County Fruit Growers' Association, Canon City; Rocky Ford Melon Growers' Association, Rocky Ford; Plateau and Debeque Fruit, Honey and Produce Association, Debeque; The Producers' Association, Debeque; Surface Creek Fruit Growers' Association, Austin; Longmont Produce Exchange, Longmont; Manzanola Fruit Association, Manzanola; Delta County Fruit Growers' Association, Delta; Boulder County Fruit Growers' Association, Boulder; Fort Collins Beet Growers' Association, Fort Collins; La Junta Melon and Produce Company, La Junta; Rifle Fruit and Produce Association, Rifle; North Fork Fruit Growers' Association, Paonia; Fruita Fruit and Produce Association, Fruita; Grand Junction Fruit Growers' Association, Clifton, Palisade, Grand Junction; Palisade

Fruit Growers' Association, Palisade; Peach Growers' Association, Palisade; Colorado Fruit and Commercial Company, Grand Junction; Montrose Fruit and Produce Association, Montrose; Hotchkiss Fruit Growers' Association, Hotchkiss; Paonia Fruit Exchange, Paonia; Colorado Fruit Growers' Association, Delta; Crawford Fruit Growers' Association, Crawford; Manzanola Fruit Growers' Association, Manzanola.

### Montana

Bitter Root Fruit Growers' Association, Hamilton.

### Utah

Farmers and Fruit Growers' Forwarding Association, Centerville; Ogden Fruit Growers' Association, Ogden; Brigham City Fruit Growers' Association, Brigham City; Utah County Fruit & Produce Association, Provo; Willard Fruit Growers' Association, Willard; Excelsior Fruit & Produce Association, Clearfield (Postoffice Layton R. F. D.); Centerville Fruit Growers' Association, Centerville; Bear River Valley Fruit Growers' Association, Bear River City; Springville Fruit Growers' Association, Springville; Cache Valley Fruit Growers' Association, Wellsville; Green River Fruit Growers' Association, Green River.

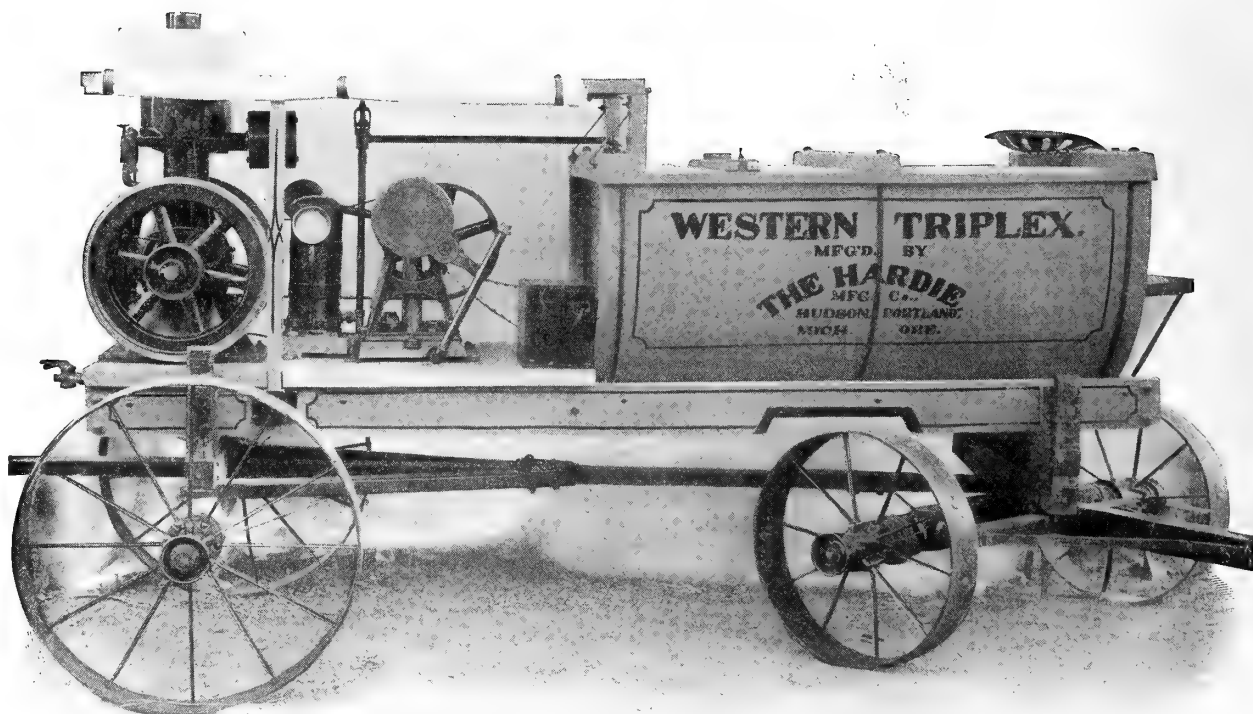
### British Columbia

Peachland Fruit Growers' Association, Limited, Peachland; British Columbia Fruit Growers' Association, Ladner; British Columbia Fruit Growers' Association, Victoria; Victoria Fruit Exchange, Victoria; Hammond Fruit Association, Hammond; Western Fruit Growers' Association, Mission; Mission City Fruit Growers' Association, Mission; Hatzic Fruit Growers' Association, Hatzic; Farmers' Exchange, Salmon Arm; Okanagan Fruit Union, Limited, Vernon; Farmers' Exchange, Kelowna; Kootenay Fruit Union, Limited, Nelson; Grand Forks Fruit Growers' Association, Grand Forks; Creston Fruit and Produce Exchange, Creston; Kaslo Fruit Growers' Association, Kaslo; Summerland Fruit Growers' Association, Summerland.

### Editor Better Fruit:

Enclosed find one dollar for subscription to your wonderful paper. Fruit grower or not, I wouldn't be without it for many times its price. I take three other fruit papers, and I must say that I have gotten more real information out of "Better Fruit" on picking, packing and all subjects relating to orchard management than all the others put together. Yours truly, Richard H. Klemmer, Middlebrook, Virginia.

# The HARDIE TRIPLEX



Is built by specialists in Spray Pump manufacturing. Years of "knowing how" and a good factory insures you a sprayer that gives you the pressure and capacity you need, and one that anybody can run successfully all the time.

A cab with curtains covers and protects your machine from weather and spray.

On account of its light weight, your team can haul it anywhere, and its low construction allows you to operate in closely set orchards without damage to fruit or trees.

Our rotary propeller agitator insures you a uniform spraying mixture at all times, and this, with the even high pressure given by our Triplex Pump, gives you the highest yield of perfect fruit.

Yourself and the few tools we send with each machine constitute all the machinists and experts needed for successful operation.

Efficiency, lightness of weight, ease of operation and low cost of upkeep leave in the Hardie Triplex

## *Nothing to Watch but the Spray*

Write today for our 56-page catalog, giving details of construction of our different sizes of power machines, hand pumps, etc.

## The Hardie Manufacturing Company

Hudson, Michigan

49 Front Street, Portland, Oregon

# *Increase Your Profits!*

By  
Using

**FANCY LABELS**

on Your  
Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*

**Schmidt Lithograph Co.**

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

## We Raise the Big Red Apples

I have land for sale in the beautiful Mosier Hills, just six miles east of the town of Hood River, Oregon.

I have the exclusive sale of the East Hood River Land Company's lands.

Some choice tracts in one to three-year-old orchard.

I have had fifteen years' experience in the Mosier district and I have on my list the best buys in this district.

**GEO. CHAMBERLAIN**  
Mosier, Oregon

## Why Bother with Irrigation?

ASK

**PHOENIX LUMBER CO.**  
SPOKANE, WASH.

ABOUT

## Cut Over Lands

YOU CAN BUY CHEAP

## BETTER FRUIT

Has no peer in the Northwest.

And so we have established

## The Fruit Journal

along similar lines in behalf of the great irrigated fruit districts of the Rocky Mountain region, a companion paper to this, your favorite fruit magazine.

We have made it up-to-date, clean, high class editorially, mechanically and pictorially.

The subscription rate is \$1.00 per year. It is worth it.

**THE INTERMOUNTAIN  
FRUIT JOURNAL**

Grand Junction, Colorado

## *Ask the People Using Our Boxes About Quality and Service*

WE MAKE EVERYTHING IN FRUIT PACKAGES

## Multnomah Lumber & Box Co.

Jobbers of Pearson Cement-Coated Box Nails

Portland, Oregon



# Seeds

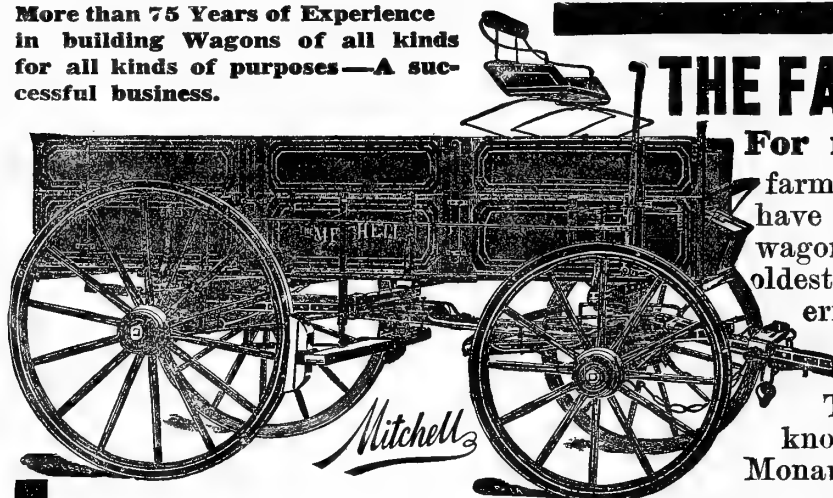
THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street J. J. BUTZER Portland, Oregon  
Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

J. M. Schmeltzer, Secretary  
Hood River Abstract Company,  
Hood River, Oregon  
ABSTRACTS INSURANCE  
CONVEYANCING

More than 75 Years of Experience  
in building Wagons of all kinds  
for all kinds of purposes—A suc-  
cessful business.



## THE FARMER KNOWS

For more than 75 Years

farmers throughout the country have been buying "Mitchell" wagons. The "Mitchell" is the oldest established wagon in America. For all these years the "Mitchell" has been giving absolute satisfaction. The "Mitchell" has become known as the "Light-Running Monarch of the Road"

Those farmers who have once purchased a "Mitchell" are keen to tell their friends of the wonderful satisfaction—the great value—the long service—the honest construction. And when he wants another wagon for any purpose he goes to his dealer and gets another "Mitchell." Only the very best of material enters into the making of a "Mitchell"—making it the strongest, and at the same time, the lightest running wagon on the market. The woodstock used in the manufacture of "Mitchell" wagons is always the very cream of first grades, costing the makers from 25 to 35% above cost of first grades. The "Mitchell" is *the one wagon* that gives the farmer greatest service—most satisfaction and greatest value for his money.

### Be Sure You Are Right

Branch Offices:  
Spokane, Wash  
Boise, Idaho

Buy a wagon that is made right from start to finish. The "Mitchell" wagon has a reputation to live up to. So you are sure to get the best wagon that can be made, also you get that at a price that is very low considering the grades of materials that go into the manufacture of a Mitchell. All wood stock is thoroughly air seasoned. Each part is made of stock especially suited to its purpose. Axles, singletrees and neckyokes—hickory. Hubs, spokes, felloes, bolsters, hounds and tongue—white oak. Doubletrees, brake bars, bed sills and box cleats—rock elm. Sides, ends and seats—yellow poplar. Buy a Mitchell at your dealers. Every farmer should have a Mitchell catalog to refer to. We will mail one postpaid, free of charge, upon the receipt of your name and address.

**Mitchell**  
LEWIS & STAYER CO.  
109-125  
E. Morrison St.  
Portland, Oregon

## S. E. Bartmess

UNDERTAKER AND  
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

Hood River, Oregon

## Paste for Labeling

"PALO ALTO" PASTE POWDER

added to cold water, instantly makes a beautiful, smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss. No spoiled paste.

Paste Specialists

ROBINSON CHEMICAL WORKS

349-351 Eighth Street  
San Francisco, California

## VEHICLES AND AGRICULTURAL IMPLEMENTS

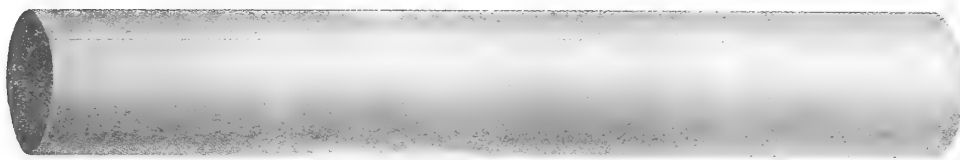
THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.

HOOD RIVER, OREGON



# ANYTHING IN SHEET STEEL



STEEL PIPES SAVE WATER

STEEL PIPES SAVE LABOR

YOU DO NOT HAVE TO WAIT FOR STEEL PIPES TO  
"SOAK UP" AND THEY LAST INDEFINITELY

WE MANUFACTURE

Galvanized Steel Pipe

Storage Tanks

Galvanized Steel Culverts

Pressure Tanks

Asphaltum Coated Pipe

Steel Flumes

Columbia Hydraulic Rams

**COLUMBIA ENGINEERING WORKS, Portland, Oregon**



## *Dollars and Dollars and Dollars*

Yes, that is what our Shrubbery and Fruit Trees yield to our customers. Our Ornamental Trees and Shrubbery enable our customers to inhabit the most beautiful spots on earth.

If interested, call our salesman or write us.

ALWAYS ROOM FOR ONE  
MORE SALESMAN

## Capital City Nursery Company

413-416 U. S. National Bank Building, SALEM, OREGON

The picture below shows sixty acres of five-year-old orchard belonging to  
**THE DUFUR LAND & DEVELOPMENT COMPANY, at**

# Dufur, Oregon

DUFUR is fifteen miles south of The Dalles. The climatic conditions at DUFUR are identical with Hood River. Hood River has made a success of apple growing. We have better soil at DUFUR than they have at Hood River. This orchard at Hood River would easily bring \$1,200 per acre. We also have 1,400 acres of land adjoining this orchard which we will plant to orchard, sell at prices from \$350 to \$500 per acre, and care for same for five years. Terms, 10 per cent cash, 1½ per cent per month.



We beg to quote below an extract from the address delivered by Mr. A. I. Mason of Hood River, before the Y. M. C. A. in Portland, Oregon, in January last, in which he states as follows:

"If you are going to grow apples, select your locality where you can grow the apple the most successfully and get the most out of it. As I have said before, you do not necessarily have to go to Hood River. Dufur is another splendid place. I do not know but what I would go and investigate Dufur if I were going to leave our valley. I have seen as fine apples there as anywhere in the Northwest, and I am not boosting Dufur, either."

The above quotation of Mr. Mason is given with his knowledge and consent, and we feel safe in saying that his judgment with reference to the fruit-growing industry in Oregon is as good as the best.

For further information inquire

## THE HART LAND COMPANY SELLING AGENTS

912 CHAMBER OF COMMERCE BUILDING

PORTLAND, OREGON

VOLUME FIVE

NUMBER TWELVE

10 CENTS  
A COPY DOLLAR A YEAR

---

OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

---

# BETTER FRUIT

*JUNE, 1911—FRUIT GROWERS' GARDEN EDITION*

---



"THE ALTON IMPROVED RED RASPBERRY"  
PROPAGATED BY A. O. GILBERTSON, MASON CITY, IOWA

---

PUBLISHED BY BETTER FRUIT PUBLISHING COMPANY, HOOD RIVER, OREGON

Fruit Pests Are Unknown  
in the famous

# Bitter Root Valley

on Montana's Pacific Slope  
You save the labor and cost of spraying

## Smudging Is Unnecessary

There has not been a killing frost on the bench lands in the growing season in the history of the Valley.

There are no dust storms.

Pure water and sunshine 300 days in the year make ideal health conditions.

Net profits annually range from \$2,000 to \$5,000.

Undeveloped land in this remarkable fruit district can still be bought for **less money** than is asked in other valleys less perfectly adapted by nature for successful fruit growing. Values now range from \$250 to \$350 per acre.

Developed tracts of ten acres, with contract to cultivate and care for same to five-year maturity, cost only \$5,000 if purchased now. Easy terms of payment for both developed and undeveloped land.

Detailed information upon request.

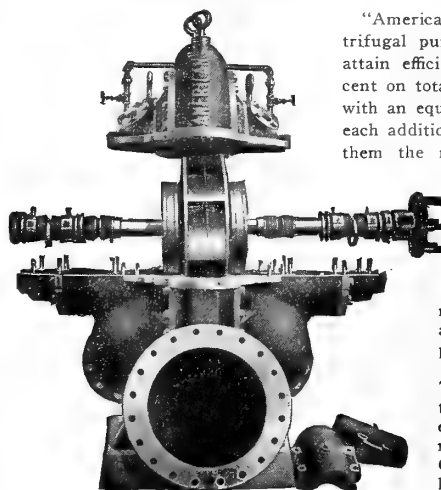
## Bitter Root Valley Irrigation Co.

First National Bank Building, CHICAGO

All the Grand Prizes and All the Gold Medals

Given by the Alaska-Yukon-Pacific Exposition at Seattle in 1909 to pumps were awarded to

## "AMERICAN" PUMPING MACHINERY



"American" single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

"American" centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for "Efficiency Tests of American Centrifugals," by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

## The American Well Works

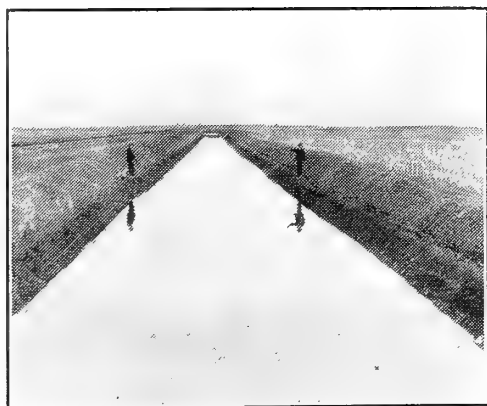
General Office and Works: Aurora, Illinois, U. S. A.  
Chicago Office: First National Bank Building

PACIFIC COAST SALES AGENCIES:

70 FREMONT STREET, SAN FRANCISCO  
341 SOUTH LOS ANGELES STREET, LOS ANGELES  
SECOND AND ASH STREETS, PORTLAND, OREGON  
1246 FIRST AVENUE SOUTH, SEATTLE  
305 COLUMBIA BUILDING, SPOKANE

# THE GRAVITY IRRIGATION SYSTEM OF THE SPOKANE VALLEY

Has developed the greatest apple and berry district of the West. **Nearness to market** causes larger net returns than in any other locality. Seventy-two trains daily through the valley. Every modern convenience. "Life's journey is swift; let us live by the way." The Spokane Valley has the unique distinction of being the only established apple district near a big city. Think what that means and investigate. Five thousand contented settlers.



THE BEST  
IRRIGATION  
SYSTEM  
IN THE  
WEST

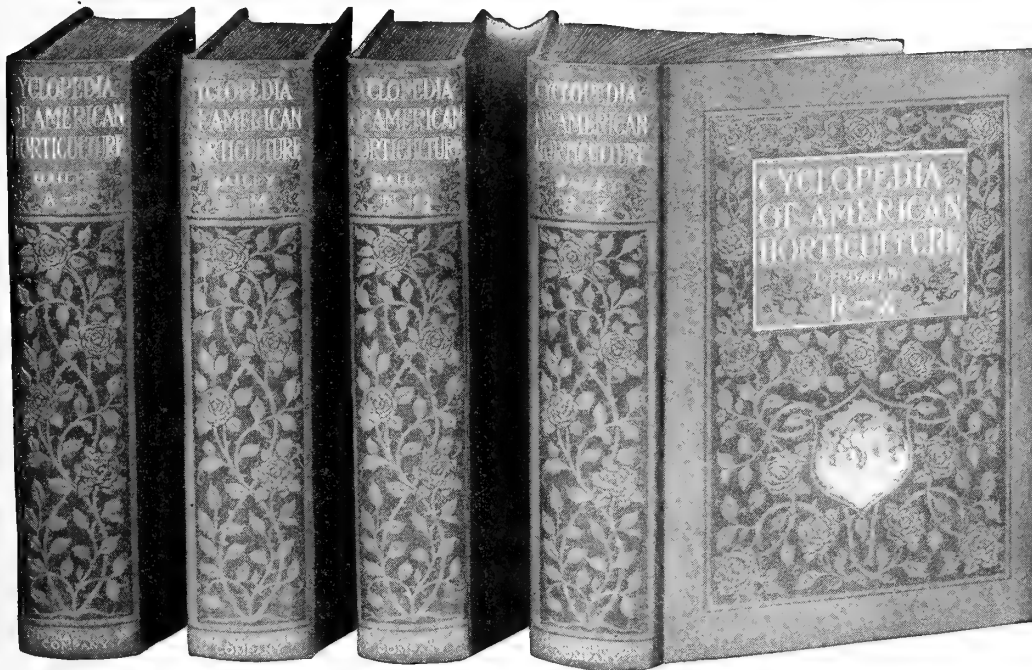


HOMES AND SCHOOL IN THE  
SPOKANE VALLEY

## SPOKANE VALLEY IRRIGATED LAND CO.

401 SPRAGUE AVENUE, SPOKANE, WASHINGTON

## A Great Offer for Our Readers on Special Easy Terms



A Text-Book to  
the Student

A Manual to the  
Gardener

A Library to the  
Teacher

A Treasure to  
the Botanist

A Guide to the  
Amateur

A Companion to  
the Country  
Gentleman

## L. H. Bailey's Remarkable Cyclopedia of American Horticulture

The Cyclopedia of American Horticulture presents the combined labor and experience of the 500 foremost American and Canadian authorities on horticultural subjects, which it has taken years of painstaking editorial work to put into its present convenient and attractive form. These four magnificent volumes place at the disposal of the horticulturist, whether practical, amateur or scientific, an ample and readily accessible account of every subject which at any time may be of interest or practical use in his calling.

### EVERY LOCALITY TREATED

Its range is wide, covering plants, flowers, vegetables, trees, tillage processes, physiological chemistry, tools and implements, cultural discussions, botanical history, biographical sketches, horticultural geography and a myriad items that only constant use will reveal.

### GREAT VALUE TO NURSERYMEN

The set is indispensable to all American libraries, not only because of its position as the foremost work of reference in its field, but by reason also of its great literary excellence and its scientific accuracy, as well as the wealth of cultural data and descriptions it contains. Nor has the scope of the volumes been confined to botanical subjects alone. Such captions as "Diseases of Plants," "Graftage," "Parks," "Perfumery Gardening," "Insects," "Nut Culture," "Railroad Gardening," "Transplanting," "Plant Breeding," "Storage," "Tillage," "Tools," all illustrate the fact that every subject in any way incident to the activities of the horticulturist has been fully covered, commercially as well as scientifically.

### COMMERCIALLY PRACTICAL

It is therefore evident that the appeal of this work is very general. Its subject matter is of almost universal interest, and is treated in such a practical, scholarly and discriminating manner that whoever may be in any way concerned with horticulture, whether as a means of gaining a livelihood, as a mode of recreation, as an outlet for pent-up energy, as a field for scientific investigations, as a method of beautifying his surroundings, as gardener, seedsman, korist, student, teacher, botanist, merchant or country gentleman, will find in "The Cyclopedia of American Horticulture" a work replete with suggestions, abounding in ideas, and fertile in timely hints, philosophic in design, wide in scope and minute in detail—a counselor, guide and instructor ever within call.

Four large quarto volumes, 2,016 pages, 50 full page plates, 500 contributors, 2,800 original engravings, 4,400 articles, 24,400 plant names.

**Our Offer** Better Fruit has always endeavored to supply its readers with the most authoritative and up-to-date matter on horticultural methods, and has therefore made arrangements with the publishers of the **CYCLOPEDIA OF AMERICAN HORTICULTURE** whereby they may obtain the work on special easy monthly terms. The complete set of four volumes, bound in cloth will be delivered to you for only \$2.00 down and \$2.00 a month for 9 months. Further particulars sent on request.

**SEND  
ONLY \$2**

**BETTER FRUIT PUBLISHING CO., Hood River, Oregon**



IF YOU WANT TO  
MARKET YOUR  
**FRUIT**

RIGHT

ALWAYS SHIP TO

**W. B. Glafke Co.**

WHOLESALE FRUITS  
AND PRODUCE

108-110 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

**DRYER, BOLLAM & CO.**

GENERAL COMMISSION MERCHANTS

128 FRONT STREET

PHONES: MAIN 2348  
A 2348

PORTLAND, OREGON

**Levy & Spiegl**

WHOLESALE  
FRUITS & PRODUCE  
*Commission Merchants*

SOLICIT YOUR CONSIGNMENTS

Top Prices and Prompt Returns  
PORTLAND, OREGON

*Correspondence Solicited*

**RYAN & VIRDEN CO.**

BUTTE, MONTANA

*Branch Houses:*  
Livingston, Bozeman, Billings  
Montana  
Pocatello, Idaho  
Salt Lake City, Utah

**Wholesale Fruit and Produce**

WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS

*A strong house that gives reliable market  
reports and prompt cash returns*

The Old Reliable  
**BELL & CO.**

Incorporated

WHOLESALE  
FRUITS AND  
PRODUCE

112-114 Front Street  
PORTLAND, OREGON

**Richey & Gilbert Co.**

H. M. GILBERT, *President and Manager*

Growers and Shippers of  
**YAKIMA VALLEY FRUITS  
AND PRODUCE**

**Specialties: Apples, Peaches,  
Pears and Cantaloupes**

TOPPENISH, WASHINGTON

FAMOUS HOOD RIVER

**APPLES**

Spitzenbergs, Newtowns, Jonathans,  
Arkansas Blacks, Ortleys, Baldwins,  
Winesaps, R. C. Pippins, Ben Davis,  
M. B. Twigs

**Look Good, Taste Better, Sell Best**

*Grade and Pack Guaranteed*

**Apple Growers' Union**

Hood River, Oregon

**Mark Levy & Co.**

COMMISSION  
MERCHANTS

WHOLESALE FRUITS

121-123 FRONT AND  
200 WASHINGTON ST.

PORTLAND, OREGON

**T. O'MALLEY CO.**

COMMISSION MERCHANTS

Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**SGOBEL & DAY**

*Established 1869*

235-238 West Street

NEW YORK

Strictly commission house. Specialists in apples,  
pears and prunes. Exporters of Newtown Pippins  
to their own representatives in England

**QUALITY  
QUALITY  
QUALITY**

# D. CROSSLEY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents; we sell apples. We make a specialty of handling **APPLES, PEARS AND PRUNES** on the New York and foreign markets. Correspondence solicited.

200 to 204 FRANKLIN STREET, NEW YORK

NEW YORK

LIVERPOOL

LONDON

GLASGOW

## SIMONS, SHUTTLEWORTH & CO.

LIVERPOOL and MANCHESTER

SIMONS, JACOBS &amp; CO.

GLASGOW

J. H. LUTTEN & SON  
HAMBURGOMER DECUGIS ET FILS  
PARIS

GARCIA, JACOBS &amp; CO.

LONDON

## European Receivers of American Fruits

FOR MARKET INFORMATION ADDRESS:

Simons, Shuttleworth & French Co.  
204 Franklin Street, New YorkWalter Webling  
46 Clinton Street, BostonJohn Brown  
Brighton, OntarioIra B. Solomon  
Canning, Nova ScotiaWm. Clement  
Montreal, QuebecD. L. Dick  
Portland, Maine

OUR SPECIALTIES ARE APPLES AND PEARS

## Irrigation - Drainage - Conservation - Development

In whatever way you are trying to get the most out of your land, you like to get all the help you can for the least money. There are and will be in every number of the

### NATIONAL LAND AND IRRIGATION JOURNAL

enough helpful suggestions and items of valuable information about what is being done or tried in your own section and in other places to cover the subscription price a dozen times.

The price is only One Dollar a year. Send it today, in any form your please.

### NATIONAL LAND AND IRRIGATION JOURNAL

30 SOUTH MARKET STREET

CHICAGO, ILLINOIS

*If you want to  
know about*

# OREGON

*Subscribe  
for*

## THE CHAMBER OF COMMERCE BULLETIN

*The Largest Commercial Magazine in the West. Devoted to upbuilding Oregon and the Pacific Northwest*

SUBSCRIBE NOW, \$1.50 PER YEAR

ADDRESS

## THE CHAMBER OF COMMERCE BULLETIN

DAVID N. MOESSOHN, Publisher

Suite 717 Chamber of Commerce Building, PORTLAND, OREGON

*Ship Your APPLES and PEARS to the Purely Commission and Absolutely Reliable House*

# W. DENNIS & SONS

## LIMITED

COVENT GARDEN MARKET  
LONDON

and

CUMBERLAND STREET  
LIVERPOOL

## SLOCOM'S BOOK STORE

**Office Supplies  
Stationery**

Ledgers, Journals, Time Books  
Memorandum Books  
Rubber Stamps

Souvenir Postals      Picture Frames

## SEATTLE

Increased 194 per cent in population, according to Uncle Sam's last census. This is more than any other large city in the PACIFIC NORTHWEST.

### WASHINGTON

Leads all states of the Union in growth, having increased 120.4 per cent, according to the same authority.

If you want accurate information about Seattle and Washington, subscribe for

### PACIFIC NORTHWEST COMMERCE

The official publication of the Seattle Chamber of Commerce. Comes monthly, \$1.50 a year.

Address

### PACIFIC NORTHWEST COMMERCE

Suite 842 Central Building  
SEATTLE, WASHINGTON

## MCEWEN & KOSKEY

Wholesale Fruit and Produce  
and General Commission  
Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

# Spitzenbergs & Newtowns

*From the*

**Hood River Valley,  
Oregon**

Took the first prize on carload entry at the Third National Apple Show, Spokane, Washington, and Chicago, Illinois, 1910.

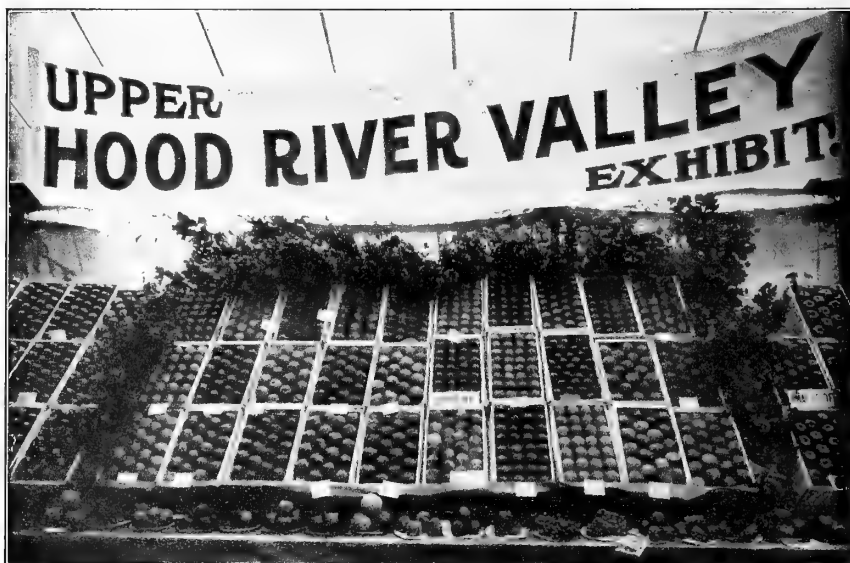
The Spitzenberg car scored, out of a possible 1,000 points, 997. The Newtown car, out of a possible 990 points, scored 988.

The Spitzenberg carload also won the championship carload prize at this show.

## Can You Beat It?

We have got land improved and unimproved that is growing such fruit that can grow it.

We are agents for the Mount Hood Railroad Company's logged off lands in Upper Hood River Valley. Many started in a small way; today they are independent. You can begin today. It pays to see us. Send today for large list of Hood River orchard land, improved and unimproved, and handsome illustrated booklet.



*The above picture shows a prize-winning exhibit of Upper Hood River Valley apples at the Hood River Apple Show*

**W. J. Baker & Company** Hood River  
Oregon

The oldest real estate firm in Hood River. Best apple land our specialty

# EVERY SHIPPER

Should aim to retain his identity and build up his business year by year, by shipping exactly what he quotes, and by confining his business relations to reliable dealers.

No shipper can safely rely entirely upon his individual knowledge of his distant customers' "business methods"—it is necessary to know how such customers **have treated other shippers**. The Produce Reporter's Credit Book ("Blue Book") and the Weekly Credit Sheets, and Special Reports keep Members fully posted up to the minute.

Again, no shipper is so well equipped that he can get as good results when shipments are "refused," or complaints made, as he can through the Adjusting Department of the Produce Reporter.

Finally, **Members of this organization do not lose their identity**—do not turn their marketing over to others, perhaps a thousand miles away—but **do their own business**—the doors of opportunity are left open for the expansion and permanent development of their business through their own enterprise and ability.

No matter how reliable the party who wishes to do your business for you (and there are many—though perhaps more who are not), **carefully consider the future—what is there in their "System" FOR YOU?**

Send for pamphlet, **"Four Ways to Market Your Crop."** Tell us, how many cars, what, and when (approximately) you will be ready to ship.

## Produce Reporter Company

34 SO. CLARK STREET  
CHICAGO

Reference:  
First National Bank of Chicago

Telephones  
Randolph 3412  
" 3413

## Gibson Fruit Company

(Not Inc.)

WHOLESALE COMMISSION  
SHIPPERS' MARKETING AGENTS  
FRUIT AND PRODUCE

Codes: Our own Cold Storage Plant on premises  
Capacity 200 Cars  
Modern Economy 131 South Water Street  
Revised Economy CHICAGO  
Revised Citrus

## Selling Apples

### *A Science and an Art*

It would by no means be stretching the truth to declare that an elaborate treatise easily could be written wherein ample proofs could be cited to prove that there is a science as well as an art involved in the successful selling of Western Box Apples, as well as Western Fruits generally.

## Why?

As a science we know it takes years of experience to gain the exact knowledge of varieties, keeping qualities, trade preferences, etc., to say nothing of the "eternal vigilance" regarding market conditions from season to season—aye, from day to day—in order to reach even a fair success in the way of keeping values and prices on speaking terms.

As an art, the business involves every requirement that goes to make "every man an artist in his way." Your apple man to be worth while must amass a variety of essentially technical detail that goes to make the finished salesman, for finished salesmanship is now conceded to call for talent of the highest order. We mean **talent**, not "oxaline."

Yet withal, the matter of selling Western Box Apples and other Western Fruits is a decidedly practical matter. It is largely a proposition to convert the fruits into as much of the "coin of the realm" as possible, and do this with certainty and dispatch.

For the past several years we've handled thousands of cars of these fruits annually, and we take pardonable pride in our record for RESULTS.

Correspondence solicited.

## Gibson Fruit Company

CHICAGO

# ORCHARD YARN

For methods and advantages in using Orchard Yarn read the first article in December issue of "Better Fruit" by a world expert.

Tarred Orchard Yarn is used by the foremost growers in all sections.

Natural, practical, economical method of supporting heavily laden trees instead of props. Makes cultivation easier and does not chafe the limbs.

Testimony: More Yarn sold last year than all previous years combined. Sold by all dealers.

Manufactured and sold by

**THE PORTLAND CORDAGE COMPANY**

PORTLAND, OREGON

SEATTLE, WASHINGTON

## TREES APPLE, CHERRY TREES PEAR, PEACH

**MILTON NURSERY COMPANY**

A. MILLER & SONS, Inc.

You cannot afford to take a chance in buying trees to plant for future profit. It requires knowledge, experience and equipment to grow reliable nursery stock.

**OUR 33 YEARS' EXPERIENCE** in growing first-class trees, true to name, for commercial orchards, insures our customers against any risk as to quality and genuineness of stock.

Orders are now being booked for fall delivery 1911. Catalog and price list free for the asking.

Address all communications to

**MILTON NURSERY COMPANY, Milton, Oregon**



A PRODUCING ORCHARD AT OPPORTUNITY, WASHINGTON

## Why Experiment

With projects which have been tried and found wanting? "OPPORTUNITY," in the far-famed Spokane Valley, has passed the experimental stage, as every foot of our soil is capable of cultivation, and is producing the highest grade of fruits, which because of their superior quality command highest market prices.

It has not only proven itself one of the finest orchard projects in the Northwest, but is the ideal place for the home-builder. Its proximity to the city of Spokane, three miles distant, splendid market facilities, steam and electric lines, churches, schools, electric lights, telephone service, water under pressure for domestic use, and the irrigation water carried to highest point on each tract, gives the purchaser all the conveniences of the city and the comforts of the country.

### Our Guarantee to Investors

If you have not the time or inclination to develop and plant an orchard yourself, we will have our expert horticulturist plant an orchard for you to the best varieties of fruit, taking entire charge of it until it comes into bearing, and then turn it over—an orchard which is an income bringer from the start.

If at the expiration of four years you are not satisfied with your investment, **WE WILL REFUND YOUR MONEY WITH SIX PER CENT INTEREST.** This eliminates all financial risk on your part and makes your investment absolutely secure.

This proposition will bear rigid investigation. Our guarantee is absolutely good, as we are financially responsible, and can carry out all our plans for planting this land to orchards.

References: Old National Bank and Traders National Bank, Spokane, Washington.

## Modern Irrigation and Land Company

326 First Avenue

Spokane, Washington

Gentlemen: Please send me booklet on Opportunity.

Name .....

Address .....

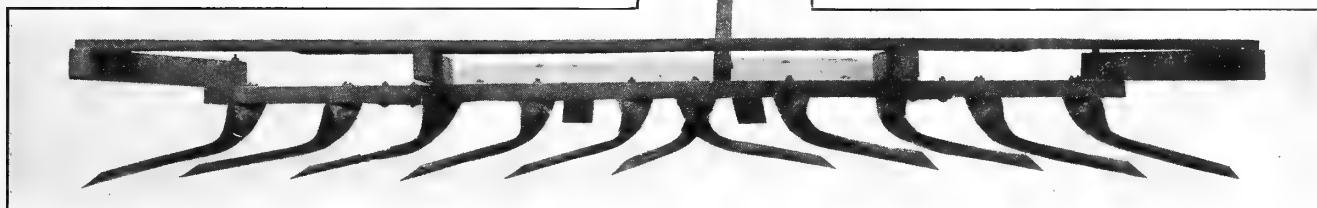


# KIMBALL CULTIVATOR

*Great Weeds and Ferns Exterminator*

Ninety Per Cent  
Hood River Orchardists  
Use  
This Machine

Send for  
Illustrated Descriptive  
Booklet



Hood River, Oregon, February 26, 1910

Mr. W. A. Johnston,  
The Dalles, Oregon

Dear Sir: I use three "Kimball Cultivators" in my orchard. There is nothing better as a weeder, dust mulcher, or to stir the soil.

Yours truly,

E. H. Shepard, *Editor "Better Fruit"*

## W.A. JOHNSTON, Manufacturer

Office and Factory, 422 East Third Street, The Dalles, Oregon

Long Distance Phone, Red 991

# WHITE SALMON VALLEY

## NON-IRRIGATED

Having direct water **TRANSPORTATION**, after the Panama Canal is built, it is estimated that White Salmon and Hood River Newtowns can be put on the English market for 35 cents a box.

At the Third National Apple Show, where four carloads scored higher than the highest car last year, Hood River won **Grand Championship Prize** on **Spitzenbergs** and first prize on Yellow Newtown car. Two years in succession Spitzenbergs have won this prize. These two apples, Spitzenbergs and Newtowns are our specialties.

White Salmon, being just across the Columbia from Hood River, belongs to this **world famous** apple section of the **Cascade Highlands**.

Other places of the Northwest are also profitable for orchards, but in **these** highlands is the place to live and enthuse, as well as to make money.

White Salmon, being a comparatively new orchard section (opened by the recent construction of the North Bank R. R.), there are great opportunities for investment.

## Development League

WHITE SALMON, WASHINGTON

### White Salmon, Washington, Orchard Lands, 30 Day Specials

- 777—10 acres first-class orchard land, only 5 miles out, red shot soil, fine view, on county road; only \$125 acre, on easy terms.
- 779—20 acres 7½ miles out, near saw mill, store and postoffice, easily cleared, some brush land, 1 acre under plow, small cabin, good soil; present price only \$2,100; easy terms.
- 788—40 acres near large orchard company's property, county road on one side, little or practically no waste land, red shot soil, 11 miles to town, 2 miles to postoffice, owner needs money; sell for \$75 acre, \$500 cash, \$25 a month, 7% interest.
- 790—80 acres only 8 miles from North Bank station, 2 miles to store and postoffice; \$5,000 for the 80, only \$2,000 cash, \$1,000 per year, 7% interest. **THIS OFFER THIS MONTH ONLY.**

**H. W. DAY REALTY CO., White Salmon, Washington**

(Successors to White Salmon Realty Co.)

APPLES

PLUMS

PEARS

PEACHES

PRUNES

## WHITE SALMON VALLEY THE LAND OF OPPORTUNITY

Located across the Columbia River from Hood River, Oregon, the White Salmon Valley offers the greatest opportunities of any land on earth to fruit growers.

**WHERE APPLES, CHERRIES, PEACHES, PEARs, PRUNES AND STRAWBERRIES GROW TO PERFECTION**

A few dollars invested in fruit land today will return to you in a very few years sixty-fold. The **SOIL, CLIMATE, WATER** and **SCENERY** are unsurpassed by that of any country.

We have bargains in orchard lands in and near White Salmon, also large and small bodies of timber land, cheap.

WRITE US FOR DESCRIPTIVE MATTER AND PRICES

**ESTES REALTY & INVESTMENT CO.**

White Salmon, Washington

BERRIES

CHERRIES

STRAWBERRIES

NUTS

JONATHANS NEWTOWNS

SPITZENBERGS WINESAPS

# HOMER G. DAY

## White Salmon

Choice

## Apple Lands

at

Reasonable Prices

in

Large and Small

Tracts

## HOMER G. DAY

Successor to Day Brothers

BRIDGEMAN BLOCK

WHITE SALMON, WASHINGTON

## For Orchard Cultivation This Harrow Has Made Good

The "ACME" is the only implement you need to follow the plow in any kind of ground. It works either irrigated or dry farms. The sharp, sloping coulters on the "ACME" cut through the sod or stubble turned under by the plow, and do not drag it to the surface. The "ACME" is a perfect weed exterminator and mulcher, and will keep down weed growths in all orchards.

### ACME Pulverizing Harrow, Clod Crusher and Leveler —

is also the best Harrow for general farming, and for fitting soil for grains, alfalfa, etc., because the coulters work every inch of the soil, cutting through to the under soil, which other harrows leave lumpy and full of air spaces, pulverizes and then compacts this under soil and leaves the top soil loose. Soil harrowed with an "ACME" will attract and conserve all the moisture for the benefit of the growing crops. Made entirely of steel and iron. In sizes to suit every one—3 to 17½ feet wide. Each and every part guaranteed.

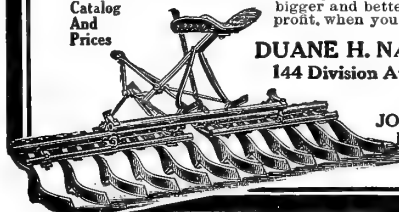
**Keeps Down Weed Growth—Produces Ideal Surface  
Mulch—No Tree Roots Injured by The Coulters—  
Branches Not Disturbed by Horses.**

Write for  
Catalog  
And  
Prices

Send for our combined catalog and booklet  
—"Preparation of The Soil," which will mean  
bigger and better growth for you and more  
profit, when you have read it.

**DUANE H. NASH, Incorporated**  
144 Division Ave., Millington, N. J.

**GENERAL AGENTS:**  
**JOHN DEERE PLOW CO.**  
Portland, Ore., Spokane, Wash.



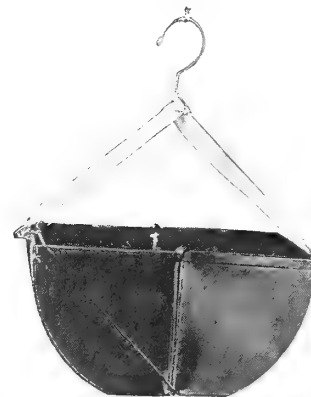
THE SIMPLEST, EASIEST AND  
MOST PERFECT

# Picking Bucket

ON THE MARKET

Every piece of fruit that is picked without bruising is  
*money in your pocket. A day's picking will pay for it.*

PRICE, \$1.50



AGENTS WANTED AT ONCE

WRITE

## Palmer Bucket Co.

HOOD RIVER, OREGON

P. S. — Tomatoes, cherries, grapes and all tender fruit can be  
emptied from this bucket without a bruise.

# Irrigated Orchard Tracts **Rogue River Valley**



ROGUELANDS IRRIGATED ORCHARD TRACTS

OREGON ORCHARDS ARE THE MOST FAMOUS  
IN THE WORLD

ROGUE RIVER VALLEY IS THE BEST ORCHARD  
DISTRICT IN OREGON

SOLD ON SMALL MONTHLY  
OR ANNUAL PAYMENT PLAN

is coming into bearing. You can clear \$500 per acre when your orchard is developed. We will sell you a five-acre irrigated orchard tract in the very heart of this wonderful orchard country, with splendid railroad facilities, near the prosperous city of Medford, planted to standard varieties of apples or pears, at \$350 per acre; \$350 cash, balance covering a period of four years. Orchards cared for during a period of five years or turned over at once to the purchaser.

Let us tell you all about the glorious country of Southern Oregon and the wonderful orchards that have made this valley famous. Write for our literature. Our references: Bradstreets and R. G. Dun.

The Rogue River Valley has made the apple king. It has won the national prizes at the greatest shows ever held in America. It has received the highest prices ever paid for fruit in the New York and London markets. It has been declared by government experts to be the most perfect fruit belt in the world, and has proven beyond the question of a doubt that it will be the most important fruit section in the entire country. The development of orchard tracts is very profitable. You can make \$1,000 per annum on a five-acre tract while your orchard

## ROGUELANDS, INC.

FRED N. CUMMINGS, MANAGER

MEDFORD, OREGON

\$ \$ \$ \$ \$ \$ \$ \$ \$ \$

## *Dollars and Dollars and Dollars*

Yes, that is what our Shrubbery and Fruit Trees yield to our customers. Our Ornamental Trees and Shrubbery enable our customers to inhabit the most beautiful spots on earth.

If interested, call our salesman or write us.

ALWAYS ROOM FOR ONE  
MORE SALESMAN

## Capital City Nursery Company

413-416 U. S. National Bank Building, SALEM, OREGON

# Steinhardt & Kelly

101 PARK PLACE, NEW YORK

The Most Extensive Operators in High Class  
Fruits in the World. Sole distributors of the  
Justly Celebrated

## HOOD RIVER APPLES

As packed by the Hood River Apple Growers  
Union; Exclusive Representatives in the Met-  
ropolitan District for the Citrus Fruit Output  
of the Earl Fruit Co. and the Fay Fruit Co.  
of Los Angeles, California; Representing the  
Nevens Fruit Co., Merritts Island, Florida

### The Fruit House Superlative



# F. W. BALTES & COMPANY

First & Oak Streets, PORTLAND, OREGON

## Printers Stationery Catalogs Booklets Publicity Work

For thirty years we have been the leading Printers of the Pacific Northwest. We have not only kept pace with the growth and development of the country, but have established standards for good work and business service that have been adopted from Coast to Coast. We invite your inquiries.

DEPENDABLE IN PRICE AND QUALITY

## The Great Many-Purpose Irrigation Machine

It will cut your drainage ditches;  
Stir your soil; Level your land;  
Cut laterals; Cut your sage-brush;  
Throw up dikes and grade roads;  
Pick up dirt—carry it—and drop it  
where you want it.

## 20th Century Grader

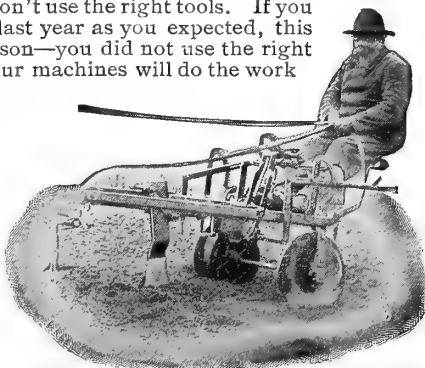
### The Original One-Man Machine

The 20th Century weighs but 600 pounds. One man with two or four horses operates it. Turns in 10-foot circle. Does twice the work of the big, heavy grader with four horses with half the effort.

Mr. Fruit Grower—you can't expect big returns from your work if you don't use the right tools. If you did not do as well last year as you expected, this is probably the reason—you did not use the right tools. If one of your machines will do the work of several expensive ones it means bigger profits at the end of the year.

You shouldn't be without a 20th Century Grader on your place for it has a score of uses.

Let us tell you what others say of it. Send postal for detailed information about these wonderful machines.



THE BAKER MANUFACTURING CO., 542 Hunter Bldg., Chicago, Ill.



## Spray Your Fruit for Codling Moth with Grasselli Arsenate of Lead IT IS THE BEST

We are now ready to demonstrate the correctness of our statement from a practical standpoint.

We give you the following names and addresses of the winners of the Grand Sweepstakes prize of \$1,000 for the best car of apples shown at the National Apple Show, Spokane, Washington:

1908—M. Horan, Wenatchee, Washington.

1909—Tronson & Guthrie, Eagle Point, Oregon.

1910—C. H. Sproat, Hood River, Oregon.

All sprayed with Grasselli Arsenate of Lead.

Bear in mind that this material was used at three different points, and during three different seasons. Does this not demonstrate to your satisfaction the superiority of Grasselli Arsenate of Lead, both as to locality and climate in which it may be used?

If so, it will not be necessary to ask yourself the question, "What Arsenate of Lead shall I use this season?" You will order Grasselli Brand.

Do not buy Arsenate of Lead on arsenic contents alone. Bear in mind when buying this spray that lead should be given equal consideration with arsenic, because it increases the adhesive properties and reduces to a minimum foliage injury.

### DISTRIBUTERS IN THE NORTHWEST:

Inland Seed Co., Spokane, Washington  
Hardie Manufacturing Co., Portland, Oregon  
Samuel Loney & Co., Walla Walla, Washington  
Missoula Drug Co., Missoula, Montana  
Western Hardware & Implement Co., Lewiston, Idaho  
Salem Fruit Union, Salem, Oregon  
Hood River Apple Growers' Union, Hood River, Oregon  
C. J. Sinsal, Boise, Idaho  
Yakima County Horticulturists' Union, North Yakima, Washington  
Darrow Bros. Seed & Supply Co., Twin Falls, Idaho  
Rogue River Fruit and Produce Ass'n, Medford, Oregon  
And in all consuming districts.

WRITE THE ABOVE, OR

H. N. LYON, Northwestern Representative  
505 Concord Building, Portland, Oregon,  
for name of nearest distributor

### THE GRASSELLI CHEMICAL CO.

Established 1839

Main Office, Cleveland, Ohio

St. Paul, Minnesota.....172 and 174 East Fifth Street  
Chicago, Illinois.....2235 Union Court  
New York City.....60 Wall Street  
St. Louis, Missouri.....112 Ferry Street  
New Orleans, Louisiana.....Godchaux Building  
Cincinnati, Ohio.....Pearl and Eggleston Streets  
Birmingham, Alabama.....825 Woodward Building  
Detroit, Michigan.....Atwater and Randolph Streets

## Western Pacific Railway

The New Transcontinental Highway

**Reaches** a rich agricultural territory hitherto without a railroad

**Opens** new markets to the merchant and orchardist and a virgin field to the land-seeker

A one per cent. maximum grade, obtained at the cost of millions, makes possible the fastest freight service ever given to California shippers

**Daily** through merchandise cars for package freight

**From** Boston, New York, Chicago, St. Louis and Kansas City

**For** all points in Northern and Central California

*For rates and routing instructions, etc., write H. M. Adams, F. T. M., Mills Building, San Francisco*

The New Transcontinental Highway  
**Western Pacific Railway**

## Every Deming Sprayer Gets a Hard Test in Our Factory

We know, just as *you* do, that you can't afford to take any chances when you commence to spray your trees. The loss of a day, or even a few hours, when conditions are just right, may mean hundreds or thousands of dollars' loss to you, and such delay might occur at any time—often *does*, in fact—when an ordinary spray pump is used. That's why, every time we finish a

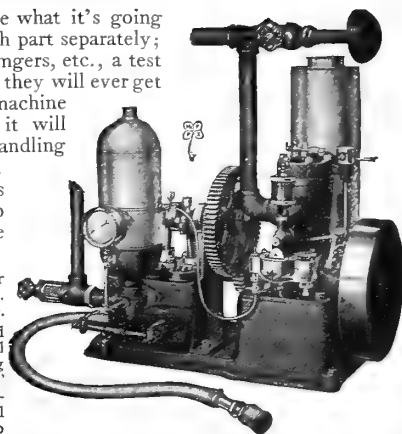
## Deming Spray Pump

we give it a *hard* test to see what it's going to do. We first try out each part separately; then we give cylinders, plungers, etc., a test under heavier pressure than they will ever get in actual use. Before the machine leaves us, we *know* that it will endure a lot more hard handling than you're likely to give it.

If such careful methods appeal to *you*, we'd like to send Catalogue and quote prices.

Order from your local dealer or from us if he doesn't handle. Always insist on the DEMING.

First prizes were awarded Deming "Century" Barrel Spray Pump, and Deming "Bordeaux" and "Simplex" Nozzles, at National Horticultural Congress, Council Bluffs, Iowa, November 10 to 19, 1910.



**CRANE CO., Pacific Coast Agents**

Portland, Seattle, Spokane, San Francisco

THE DEMING COMPANY, Manufacturers, 870 Depot Street, Selem, Ohio  
Hand and Power Pumps for All Uses



## NIAGARA AND TRIANGLE BRANDS ARSENATE OF LEAD

BEST to use with Niagara Lime-Sulphur Solution, as attested by growers of perfect fruit. Our present LIMITED supply is going fast. Can make immediate shipments. First orders will take precedence. ORDER NOW.

**HOOD RIVER SPRAY MFG. CO.**

P. O. Box 74A Hood River, Oregon

**ACID BLAST ETCHED PLATES**  
We have installed the only etching machines in the State of Oregon  
Blast etched cuts have a printing quality which has never before been obtainable with process engraved plates . . . . .  
THEY COST THE SAME AS THE OTHER KIND

**WE MAKE CUTS THAT PRINT**

**HICKS - CHATTEN ENGRAVING CO.**  
607 BLAKE-MCFALL BLDG., PORTLAND, OREGON

# Okanogan Irrigation and Improvement Co.

Capital Stock, \$500,000

Project in the very heart of the justly famous fruit belt of Okanogan County, Washington.

Over 15,000 acres of irrigated land below the high line ditches of this Company.

Ten thousand acres of land now under contract, and as much more available for irrigation.

Two thousand square miles of watershed on mountain streams furnish an abundant supply of water.

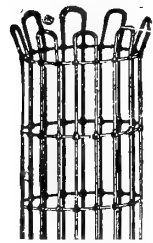
Reservoirs with storage capacity for twice as much water as needed for reserve supply in seasons of possible drouth.

Work on ditches started April 1. Sixty-three teams and men with most modern equipment now digging more than two miles of ditch each week. Company expects to have water in main canal before November 1, 1911.

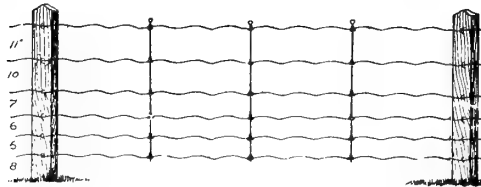
## No Better Fruit Land in the State of Washington

A small block of stock for sale at \$100 per share. Details of plan to furnish choice fruit land with perpetual water right for less than \$100 per acre will be furnished on application to the Spokane office of the Company, 518 Paulsen Building.

## RABBIT TREE GUARD



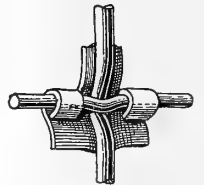
These guards are made of No. 8 galvanized wire. Stay wires 2 inches apart and 18 long. Cost 25c each. Larger sizes to order. Guard will fit any tree up to 10 inches in diameter. To hold the guard in position, press the stay wire 6 inches into the ground.



**ANCHOR FENCE** is built up complete, on the ground, of coil spring wire. Draw in one wire at a time and as many as required; after which bind on the stays of No. 8 wire with the Anchor Clamp. We loan or sell the tools.

## Anchor Clamp

It never slips  
after closing



## Anchor Fence Manufacturing and Construction Works

37 Union Avenue, corner East Pine Street, PORTLAND, OREGON

# Arcadia Irrigated Orchards

The Largest Irrigated Orchard Project in the Northwest

Arcadia is located twenty-two miles from Spokane. Our soil is rich and deep, entirely free from gravel, rock and alkali. Gravity irrigation, excellent transportation, ideal climate, no dust or sand storms.

**OUR PLAN:** We plant, cultivate, irrigate, spray, prune and care for the orchard for four years. Water free. Real estate taxes paid for five years. Over 4,000 acres is now planted to winter apples. You may remain at your present occupation while your orchard is brought to bearing, or, if desired, move onto the land at once.

**TERMS:** \$125.00 first payment secures five acres; \$250.00 first payment secures ten acres; balance monthly. Eight years in which to pay for your orchard. Write for literature.

**ARCADIA ORCHARDS COMPANY, Spokane, Washington**

# "Ortho 40" Zinc Arsenite

We are the **originators** of this arsenical as an insecticide, and consider that it meets a long felt want for a strong poison which is reasonably safe to use on foliage. "Ortho 40" Zinc Arsenite contains over 40 per cent of arsenious oxide, equivalent to 46 to 50 per cent of arsenic oxide in the form of arsenate of lead. It is thus seen to be a close rival of paris green with regard to arsenic content. It is a light, fluffy powder, readily goes into suspension in water, and requires little or no agitation, and affords a very fine covering for the apple against insects. On apples it has been sprayed as heavily as whitewash without the least bit of injury. With the use of this material there are very few, if any, stung apples. This advantage alone will raise the average grade of apples in the Northwest at least 10 per cent. There is no danger of arsenical injury of the soil with this material. The equivalent of 12 cents' worth of poisoning in arsenate of lead can be purchased in this material for five cents, or almost a third of the present price of arsenate of lead.

If you want a material which will control codling worms to greater perfection than you have ever had them controlled before, which will produce no injury in the dry interior valleys of this Coast, and for a price of about one-third of what you are at present paying for arsenate of lead, **THIS IS THE MATERIAL FOR YOU.**

Try ten pounds of it, which will cost you, express prepaid, \$2.50, and if you are not satisfied with your results, upon receipt of such information we will return your money. "Ortho 40" Zinc Arsenite is guaranteed under the United States Insecticide Law of 1910 to contain approximately 40 per cent of arsenious oxide. Write us.

## California Spray-Chemical Company

Manufacturers of Chemical Sprays: Factory, Watsonville, California

Distributors in all the Principal Fruit Growing Sections of the West

## Ogburn's Fruit Gathering Vessels

THIS VESSEL IS INDORSED BY HORTICULTURAL COLLEGES, FRUIT ASSOCIATIONS AND GROWERS.

YOU CANNOT AFFORD TO BE WITHOUT THEM. EACH ONE WILL PAY FOR ITSELF MANY TIMES IN SAVING YOUR CROP.

1911 Vessels equipped with non-shrinkable canvas bottoms, improved fastenings and shoulder strap complete.

Saves money by preventing bruising fruit in handling from tree to box. Saves time by being quick to operate and leaving both hands free to gather with. Money saved is money made.

Especially designed for apples, pears, peaches, oranges, lemons and tomatoes.

Can be used to great advantage in gathering cherries, plums, prunes and grapes. In handling small fruits, place a piece of wrapping paper in the bottom. The *canvas bottom slides underneath* the paper and delivers the fruit on your packing table without the slightest injury.

This Vessel is an oblong metal pail, black japanned, larger at the bottom than top, equipped with canvas bottom which slides from underneath the fruit, simply laying it on the bottom of the box, or where desired, without disturbing the fruit, the bell-shaped pail lifting off without injuring the fruit in any way.

THE VESSEL HOLDS ONE-HALF BUSHEL OR HALF BOX OF APPLES, AND IN EMPTYING THE SECOND TIME THE CANVAS BOTTOM EASES THE FRUIT IN THE VESSEL ON THAT IN THE BOX WITHOUT BRUISING OR SCRATCHING, WHICH IS PRACTICALLY IMPOSSIBLE WITH THE WOOD OR METAL BOTTOM PAIL.

If your hardware dealer or association haven't this Vessel in stock order direct from factory.

Trade price list furnished merchants and agents by Wheeling Corrugating Company, Wheeling, West Virginia, upon application.

Address all orders to factory.

All goods shipped direct from factory.

Manufactured and Distributed by

**WHEELING CORRUGATING COMPANY**

Wheeling, West Virginia

For J. H. OGBURN, Patentee  
WENATCHEE, WASHINGTON

Took first prize and gold medal at National Apple Show, Spokane, Washington, November 14 to 19, 1910.

### THE LATEST INVENTION



(SPECIAL ORDER BLANK)

CUT OUT ALONG DOTTED LINES

WHEELING CORRUGATING COMPANY

Wheeling, West Virginia

Gentlemen: Please ship me the following order:

.....Ogburn Fruit Gathering Vessels at \$1.50 each, FREIGHT PAID.

.....Ogburn Fruit Gathering Vessels at \$1.75 each, EXPRESS PREPAID.

.....Extra non-shrinkable canvas bottoms with fastenings, 75 cents per set, by prepaid freight or express.

NO FREIGHT ORDER RECEIVED FOR LESS THAN ONE DOZEN VESSELS  
Enclosed please find check, draft or money order for \$..... to cover above order.

Write Name and  
Address Clearly

Name.....

P. O. ....

State.....

Freight or Express point.....

Neither manufacturer nor patentee are liable for goods after delivery to railway or express company.

# Hood River City Investments

100x100 On Oak Street, with good buildings, rental income \$110 per month, only \$16,000. Liberal terms.

100x200 On Cascade Avenue, consisting of four good lots and frame house. This will double in value within two years. \$7,000. Good terms.

*Combination Orchard and Hay Ranch*—175 acres. 20 acres in orchard from two to fourteen years old, 70 acres in hay produced 100 tons in 1910, balance of land uncleared. Large house and barns, 50 inches irrigating water, all haymaking machinery, near stores and school. \$35,000. Very liberal terms. Big money to be made on this property.

(NOW IS A GOOD TIME TO BUY A HOME  
OR BUSINESS PROPERTY IN HOOD RIVER  
THERE IS SURE TO BE A BIG ADVANCE IN PRICES)

SEE OUR LIST OF ORCHARDS

**J. H. HEILBRONNER & CO.**

THE RELIABLE DEALERS

HEILBRONNER BUILDING

HOOD RIVER, OREGON

# Mosier View Orchards

The Cream of the Famous Hood River-Mosier Apple District

Five miles southeast of Mosier, overlooking the Columbia River.

2,400 acres, in five, ten and twenty-acre orchards, which in **LOCATION, SOIL, CLIMATE, ALTITUDE, AIR and WATER DRAINAGE**, form a combination of excellence, from the apple grower's standpoint, **NOT EXCELLED ANYWHERE IN THE WORLD.**

The town of Ortley, located on the property, can be reached by drives and boulevards from every orchard.

**SOLD AT A LOW PRICE** and paid for in **SMALL MONTHLY PAYMENTS**, covering a period of five years.

**THE HOOD RIVER ORCHARD LAND COMPANY** (capital \$500,000) develops the property for resident or non-resident investors for a period of five years, bringing it into bearing in the **HIGHEST POSSIBLE STATE OF HORTICULTURAL PERFECTION.**

**THE GREATEST OPPORTUNITY IN THE PACIFIC NORTHWEST** for the professional or salaried man to secure a great money-producing commercial apple orchard for a small sum down and small monthly payments.

WRITE FOR A FREE BOOKLET

**Hood River Orchard Land Company**

906-907-908-909 Yeon Building, Portland, Oregon

DEVLIN & FIREBAUGH, SALES AGENTS



# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## THE FRUIT GROWERS' SMALL VEGETABLE GARDEN

BY W. H. WICKS, AGRICULTURAL EXPERIMENT STATION, MOSCOW, IDAHO

**H**ALF an acre of the horticultural grounds of this station was selected by Professor J. R. Shinn in the spring of 1908 for use as a vegetable garden. This area was maintained for such a purpose for two years. The object of this work was to secure definite data on methods of culture, yield, cost of production and the advisability of maintaining such a garden on the farms of Idaho. This garden was planned to give the greatest possible variety and continuous supply of vegetables as may be readily grown in the home garden, and which are very frequently not grown on account of the supposed expense and time required in their production.

The garden was laid out in the form of a rectangle with rows running lengthwise in order to admit horse cultivation and to reduce the expense of labor to the minimum. The ground was worked as early as advisable in the spring and put in shape for seeding and planting by the most approved method of this region. No fertilizer was applied during the two years of the experiment.

This garden was located on the southwestern slope of one of the hills which comprise the station gardens, and is typical of the average farm and garden land in this region. It is but a short distance to the market center of Moscow, so practically all the produce was delivered to the general market or retailed to parties coming to the garden. This area is so situated that it admits the earliest possible cultivation in spring. It is free from all fall frosts until late in September.

The more desirable locations for vegetable gardens are to be found on the warm slopes of the rolling hills which comprise this country. These aspects are to the east, the south and southwest. In locating the garden care was taken to secure the best possible air and soil drainage, freedom from frost and average soil.

While all vegetables are not adapted to the same kind of soil for their best production, the dark, rich, friable soil that is found in the Palouse region will grow satisfactorily those vegetables which are adapted for culture in a fruit grower's garden. The soil of this garden is friable, deep and retains moisture well when proper surface tillage is given. It washes considerably and puddles readily during severe rain storms. Its texture is exceptionally good and root crops have no difficulty in penetrating to the greatest possible depth. Irrigation is not necessary. No alkali is present to

### Contents

FRUIT GROWERS' SMALL VEGETABLE  
GARDEN, 19

INSECTS AND MITES, 27

TWO DESTRUCTIVE PLANT LICE, 31

FRUIT INDUSTRY OF NORTHWEST, 34

CHERRY HEAVEN, 38

ORCHARD SPRAYS AND SPRAYING, 40

EDITORIAL, 50

FALL BREAKING AND PREPARATION  
OF SEED BED, 65

STANDARDIZING FRUIT, 71

interfere with the growth of vegetables. Due to the physical nature of the soil, its management is comparatively easy. The cost of cultivation in this garden will probably be less than it would be in the case of heavier soils containing a large

percentage of clay, or those that are under irrigation.

This area was plowed, harrowed and made ready for planting by dragging with a common planker. This is usually all that is necessary to put the soil of this region in first class shape for gardening. Future cultivation is easily accomplished and not expensive. A dust mulch is easily secured after rains, and this kind of mulch is effective in checking evaporation from the soil.

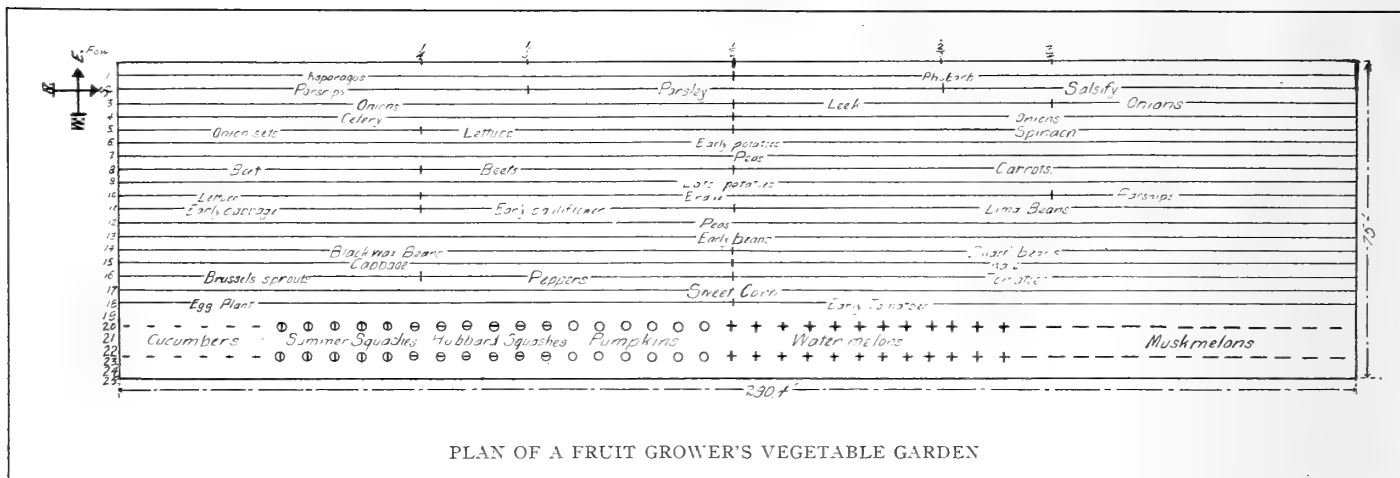
In 1908 the garden was made ready for planting by plowing April 7, harrowing and leveling April 8. The soil worked well at this date. Planting of various vegetables was done as early as advisable. All perennials were planted on one side of the garden, so they could remain for several years without interfering with the growing of annual plants. The plan of planting (see Figure 1), and vegetables used, with space allotted to each kind is given as follows:

Row 1, Conover's Colossal asparagus, one-half row; rhubarb, one-fourth row. Wyatt's Victoria, one-fourth row. St. Martin's, Row 2, Hollow crown parsnips, one-third row; Emerald parsley, one-third row; Sandwich Island Mammoth salsify, one-third row. Row 3, Prizetaker onions, one-half row; Large Rouen leek, one-fourth row; Australian Brown onion, one-fourth row. Row 4, Golden Self-Blanching celery, one-half row; onions, one-half row. Row 5, Onion sets, one-fourth row; Deacon lettuce, one-fourth row; Long Standing spinach, one-half row. Row 6, Early potatoes, one row; radishes, one-fourth row each of French Breakfast, Celestial, Scarlet Turnip, New White Icicle. Row 7, Peas, Nott's Excelsior. Row 8, Crosby's Egyptian beets, one-fourth row; Blood Red beets, one-fourth row; Golden Ball carrots, one-half row. Row 9, Late potatoes. Row 10, Grand Rapids lettuce, one-fourth row; Giant Fringed endive, one-half row; Improved Guernsey parsnips, one-fourth row. Row 11, Early York cabbage, one-fourth row; Best Early cauliflower, one-fourth row; Fordhook Bush Lima beans, one-fourth row; Burpee Improved Bush Lima beans, one-fourth row. Row 12, Prosperity peas, one-third row; Horsford Early Market, one-third row; Telephone peas, one-third row. Row 13, Extra Early Refugee beans. Row 14, Bismark Black Wax Prolific, one-half row; Dwarf Horticultural beans, one-half row. Row 15, American Drumhead Savoy cabbage, one-half row; Tall Green Curled Scotch kale, one-half row. Row 16, Burpee's Danish Prize Brussels sprouts, one-fourth row; Tabasco peppers, sixteen hills; Sweet Upright peppers, twenty hills; Early Freedom tomatoes, one-half row. Row 17, Golden Bantam sweet corn, one-half row; Cory early sweet corn, one-half row. Row 18, Early Long Purple egg plant, one-half row; Sparks Earliana tomatoes, one-half row. Rows 19 to 24, Burpee's Extra Early White Spine cucumber, twelve hills; Early White Bush summer squash, ten hills; Hubbard squash, twelve hills; Small Sugar pumpkin, twelve hills; Cole's Early watermelon, twenty-four hills; Fordhook muskmelon, twenty-six hills. Rows were three feet apart, excepting the vine crops, which were six feet apart.

All seeds were purchased from W. Atlee Burpee & Company, Philadelphia, Pennsylvania. The catalogue prices of 1908 were paid. No seed was saved for sowing in 1909. The cost of seed used in 1909 is listed in the expense account for that year. It is seldom wise for the fruit grower to grow his own seed. While seed growing is attracting much



PROFESSOR W. H. WICKS  
New Associate Editor of "Better Fruit"  
Professor of Horticulture Idaho Experiment Station  
Moscow, Idaho

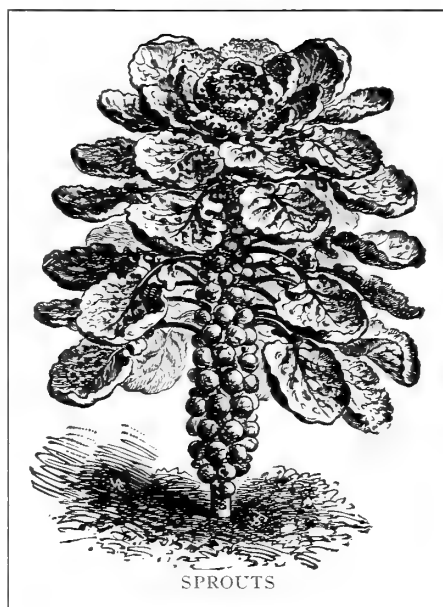


attention in this state, the busy fruit grower has not the time or space to grow seed in a garden like one under discussion. Careful judgment should be exercised in choosing garden seed. Good seeds must be true to name, viable, pure and be of the greatest possible longevity. Buy the best seeds that a reliable seedsman has to offer. Endeavor to secure the superior and improved strains at all times, for in this way only can undesirable seeds be avoided. Buying cheap seed is poor economy. Seeds should be ordered in ample time before planting to secure a good choice and receive them in due time.

In making a hotbed the gardener should be governed by (1) climate, (2) location, (3) kind of material used, (4) requirement of plants grown, (5) time the bed is made. A hotbed has artificial bottom heat, while a cold frame has not. This heat may be supplied in a number of ways, but the man on a farm will find stable manure from the horse stable the most satisfactory material for heating. A common type of hotbed frame is shown in Figure 10. It is six feet wide, twelve feet long, with twelve and six-inch sides respectively. The depth of the frame varies according to the plants to be grown. Two by three-inch cross bars are placed at intervals to support sash and give the frame firmness. If frames are to be used each year it is advisable to make them of good two-inch material with bolted parts, so they can be readily taken apart and stored until

needed. Standard hotbed sash are made three feet by six feet. Thus a twelve-foot frame requires four sash.

The manure used should be made uniform in composition by forking it over several times before placing in the pit. Hotbeds which are intended to last for two months should have from two to three feet of manure. The longer the heat is required the more manure should the bed contain. A layer of coarse material is first placed in the bottom of the



pit to keep the manure from coming in contact with the ground. When fermentation has developed sufficiently in the manure place it in the pit, tramping it firmly. A layer of leaf mold or some coarse material is then placed on top of the manure. Soil is then placed to a depth according to the requirement of plants to be grown. An average depth of soil is six inches. The temperature will rise quite high at first. Planting should not be done until it has fallen below 90 degrees Fahrenheit.

Seeds may be sown directly in the soil or in small shallow boxes, commonly called "flats." The method of sowing the seed depends upon the operator and kind of seed. The frame will need ventilation on bright sunny days. The grower should watch the frame each day, for it should be handled as local conditions require. Ventilation can easily be given by raising the sash a few inches. If possible avoid dull, cold days for watering the plants. Lower the sash in time to retain ample heat throughout the night. Endeavor to maintain growing conditions in a hotbed at all times. This will require close attention to ventilation and watering. When plants are stunted in a hotbed the best results from them in the garden cannot be expected. In brief, the points to consider in management of a hotbed are: (1) Maintaining proper heat, (2) ventilating, (3) watering, (4) hardening off, (5) transplanting.

Beginners are apt to start their plants too early in the season. Plants should

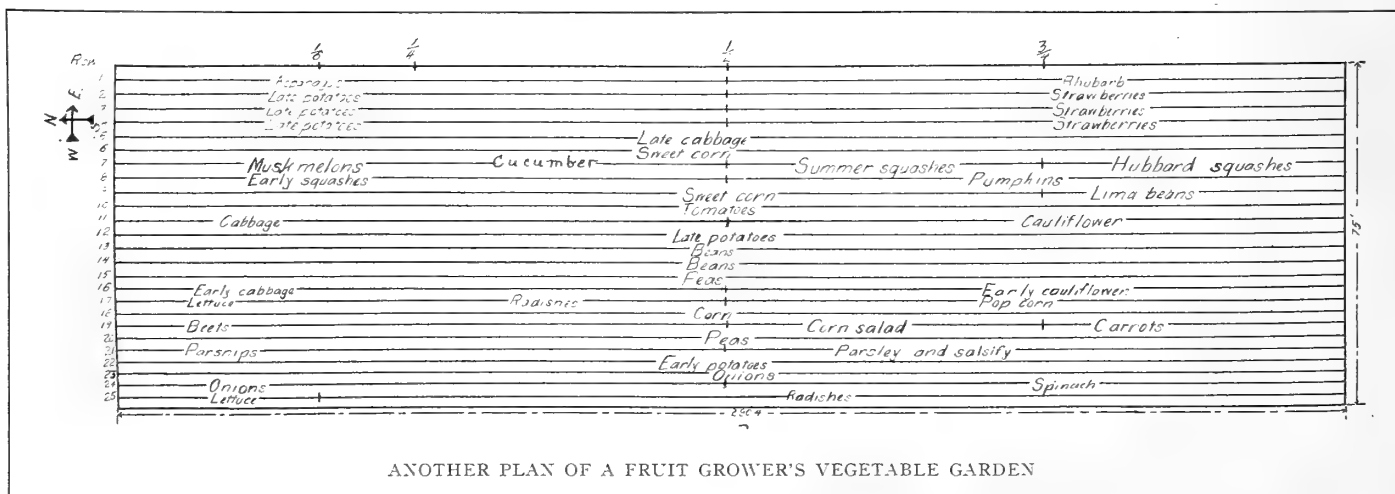




FIGURE 1—ONE-HORSE PLANKER *Photo by C. C. Vincent*

be stocky, strong and vigorous when they leave the frame. If plants are poorly grown or growth retarded very little is gained by the use of a frame.

Succession cropping was carefully practiced both years in this garden. As soon as one crop was gathered another crop was immediately planted. By judicious management three crops can be taken from the same ground in one season. Every effort should be made to utilize the space in the garden at all times. By knowing the habits of the plants used plantings can be made which will give the greatest variety of vegetables on the minimum amount of space.

Cultivation was begun as soon as the rows became well marked. It was continued at frequent intervals throughout the season. Frequent cultivations are necessary to destroy weeds and maintain moisture. It aids materially in liberating plant food by breaking the soil in small particles. A crust should not be allowed to form on the soil in the garden. It is assumed that a fruit grower would do the cultivation at odd times, which would not interfere with the regular work.

Seeds used in the garden for 1908, at a total cost of \$5.55, were as follows:

Asparagus, one ounce Conover's Colossal; beans, one quart Fordhook Bush Lima, one quart Burpee's Improved Bush Lima, two quarts Extra Early Refugee, one quart Bismark Black Wax Prolific, one quart Dwarf Horticultural; beets, one ounce Crosby's Egyptian, one ounce Blood Red; cabbage, one packet Early York, one packet American Drumhead Savoy; carrots, one ounce Golden Ball; cauliflower, one packet Best Early; celery, one packet Golden Self-Blanching; corn, one packet Early Cory, one packet Golden Bantam; cucumber, one packet Burpee's Extra Early White Spine; egg plant, one packet Early Long Purple; endive, one packet Giant Fringed; kale, one packet Tall Green Curled Scotch; leek, one packet Large Rouen; lettuce, one packet Deacon, one packet Grand Rapids; muskmelon, one packet Fordhook; watermelon, one packet Cole's Early; onion, one packet Prizetaker, one packet Australian Brown, two quarts sets; parsnips, one packet Hollow Crown, one packet Improved Guernsey; parsley, one packet Emerald; peas, one quart Prosperity, one quart Nott's Excelsior, one quart Horsford's Early Market, one quart Telephone; peppers, one packet Tabasco, one packet Sweet Upright; potatoes, one-half bushel; pumpkin, one packet Small Sugar; radishes, one packet French Breakfast, one packet Celestial, one packet Scarlet Turnip, one packet New Icicle; rhubarb, Wyatt's Victoria, St. Martins; salsify, one packet Sandwich Island Mammoth; brussels sprouts, one packet Burpee's Danish Prize; squash, one packet Early White Bush Summer, one packet Hubbard; spinach, one ounce Long Standing; tomato, one packet Spark's Earliana, one packet Early Freedom; turnip, one packet Scarlet, one packet New Icicle.

A summary of the labor account of the garden in 1908 gave the following: Team

work, plowing, harrowing and leveling, five hours; work with one horse, cultivating, four and one-half hours; hand work, planting, cultivating, spraying, thinning and weeding, fifty-five and one-half hours; a total of sixty-five hours of labor.

A carefully kept record showed the production and market value of each variety of vegetable grown during the season to be:

Celery, Golden Self Blanching, 213 bunches.	\$11.54
Cabbage, Early York and American Drumhead Savoy, 18 heads.	1.75
Scotch kale, Tall Green Curled, fair supply.	
Peppers, Tabasco and Sweet Upright, 95 specimens.	1.20
Tomatoes, Earliana, 142 pounds.	3.55
Cucumbers, Burpee's Extra Early White Spine, 127 slicing and 100 pickling.	3.08
Squash, Summer and Hubbard, 47 specimens.	2.04
Pumpkin, Small Sugar, 110 specimens.	6.60
Watermelon, Cole's Early, 2 specimens.	.50
Muskmelons, Fordhook, 6 dozen.	2.10
Egg plant, Early Long Purple, 2 dozen.	.60
Cauliflower, Best Early, 11 heads.	1.10
Salsify, Sandwich Island Mammoth, 25 dozen.	2.50
Onions (from sets), Prizetaker and Australian Brown, 20½ dozen.	1.03
Lettuce, Deacon and Grand Rapids, 343 heads.	5.76
Spinach, Long Standing, 129 heads.	.50
Potatoes, early and late, 475 pounds.	3.63
Radish, French Breakfast, Celestial and Scarlet Turnip, 34¾ dozen.	10.13
Carrot, Golden Ball, 64 dozen.	3.20
Beet, Crosby's Egyptian and Blood Red, 6½ dozen.	.65
Peas, Horsford's Early Market, Nott's Excelsior and Prosperity, 136 pounds.	6.80
Parsnips, Hollow Crown and Improved Guernsey, good supply, record lost.	
Parsley, Emerald, fair supply.	
Leeks, Rouen, 12½ dozen.	.63
Endive, Giant Fringe, 145 heads.	7.25
Sweet corn, Golden Bantam and Cory Early, 28 ears.	.24
Beans, Extra Early Refugee and Dwarf Horticultural, 43 pounds.	5.61

Total value of produce raised.....\$82.19

To team work, plowing, harrowing and leveling, 5 hours at \$4 per day.	\$ 2.00
To work with one horse, 4½ hours at \$2.50 per day.	1.13
To hand labor, 55½ hours, at \$2 per day.	11.10
To insecticides.	1.00
To garden seeds.	5.55
To raising plants.	4.00

Total expense .....\$25.78

Total net profit .....\$57.41

In 1909 the varieties of vegetables planted, with the space allotted to each, was as follows:

Row 1, Asparagus, one-half row; rhubarb, one-half row. Row 2, Late potatoes, one-half row; strawberries. Row 3, Late potatoes, one-half row; Clark Seedling strawberries. Row 4, Late potatoes, one-half row; Marshall and Senator Dunlap strawberries. Row 5, Late cabbage. Row 6, Golden Bantam sweet corn. Row 7, Burpee's Fordhook

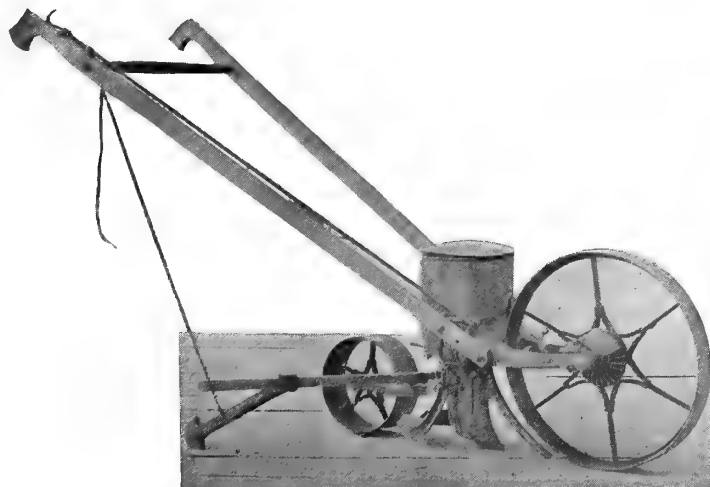


FIGURE 2—PLANET JUNIOR SEED DRILL

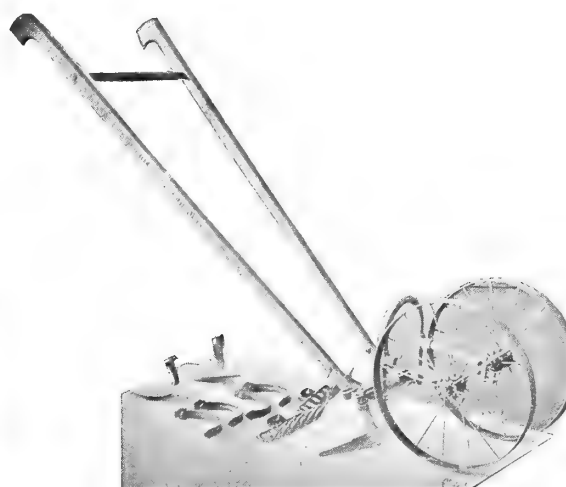


FIGURE 3—WHEEL HOE

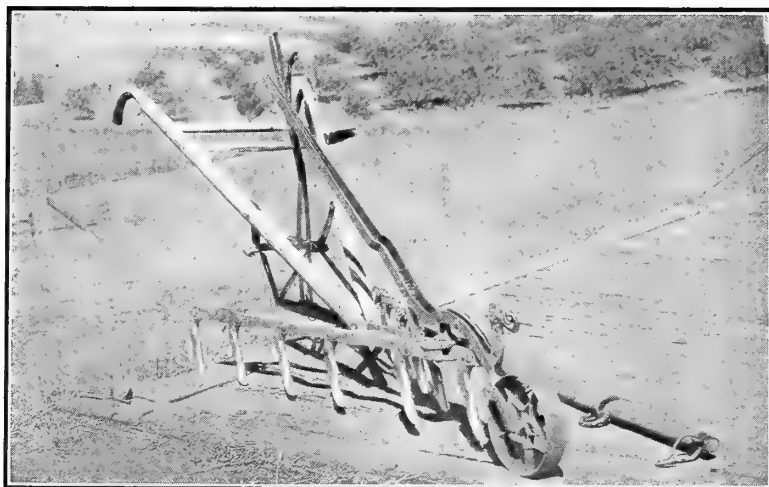


FIGURE 4—NARROW TOOTH CULTIVATOR

muskmelons, one-fourth row; Burpee's Early White Spine cucumber, one-fourth row; Summer squash, one-fourth row; Hubbard squash, one-fourth row. Row 8, Early White squash, one-half row; Small Sugar pumpkin, one-half row. Row 9, Golden Bantam sweet corn, three-fourths row; Dwarf Lima beans, one-fourth row. Row 10, Spark's Earliana tomato, one-half row; Chalk's Early Jewel tomato, one-half row. Row 11, Early York cabbage, one-fourth row; Burpee's Dry Weather cauliflower, one-half row; Surehead cabbage, one-fourth row. Row 12, Late potatoes. Row 13, Improved Refugee beans, one-half row; Extra Early Red Valentine beans, one-half row. Row 14, Burpee's Stringless Greenpod beans, one-half row; Dwarf Horticultural beans, one-half row. Row 15, Prosperity peas, one-third row; Improved Senator peas, one-third row; Mammoth Melting Sugar peas, one-third row. Row 16, Early Jersey Wakefield cabbage, one-half row; Burpee's Best Early cauliflower, one-half row. Row 17, Deacon lettuce, one-eighth row; Dwarf White heart lettuce, one-eighth row; Scarlet Turnip radish, one-fourth row; Burpee's Golden Tom Thumb popcorn, one-half row. Row 18, Crosby's Early Twelve-Rowed corn, one-half row; Burpee's Early Cosmopolitan corn, one-half row. Row 19, Crosby's Egyptian beets, one-fourth row; Edmond's Early beets, one-fourth row; Large Round Leaved corn salad, one-fourth row; Chantenay carrots, one-fourth row. Row 20, Best Extra Early and Nott's Excelsior peas, one-half row each. Row 21, Improved Guernsey parsnips, one-half row; Emerald parsnip, 20 feet; remainder, Sandwich Island Mammoth salsify. Row 22, Early potatoes, one row. Row 23, Giant Gibraltar onion seed, one-half row; Red Wethersfield onion seed, one-half row. Row 24, Globe onion sets, one-fourth row; Victoria spinach, one-half row; onion sets, one-fourth row. Row 25, Deacon lettuce, Dwarf White Heart lettuce, Rapid Red radish, French Breakfast radish, Scarlet Button radish, First in Market, one-sixth row each.

Seeds at a total cost of \$4.70 were used during the season of 1909, as follows:

Beans, one packet Dwarf Lima, one packet Burpee's Stringless Greenpod, one packet Extra Early Red Valentine, one packet Improved Refugee, one packet Dwarf Horticultural; beets, one ounce Edmond's Early, one ounce Crosby's Egyptian; cabbage, one packet Burpee's All Head, one packet Early Jersey Wakefield; carrots, one ounce Chantenay; cauliflower, one packet Burpee's Dry Weather, one packet Burpee's Best Early; celery, one packet Golden Self Blanching; corn salad, one packet Large Round Leaved; sweet corn, one packet Golden Bantam, one packet Crosby's Early Twelve-Rowed, one packet Crosby's Early Cosmopolitan; pop corn, one packet Burpee's Golden Tom Thumb; cucumber, one packet Burpee's White Spine; egg plant, one packet Black Beauty; endive, one packet Green Curled; leek, one packet Long Mezieres; lettuce, one packet each Grand Rapids, Deacon, Burpee's Iceberg, Dwarf White Heart; muskmelon, one packet Burpee's Fordhook; onions, one packet each Prizetaker, Red Wethersfield, Burpee's Giant Gibraltar; parsley, one ounce Emerald; parsnip, one ounce Improved Guernsey; peas, one packet each Prosperity, Burpee's Best Extra Early, Nott's Excelsior, Improved Senator, Mammoth Melting Sugar; peppers, one packet each Tabasco and Sweet Upright; pumpkin, one ounce Small Sugar; radishes, one packet each Scarlet Button, Rapid Red, Scarlet Turnip, French Breakfast; salsify, one packet Sandwich Island Mammoth; spinach, one packet Victoria; squash, one packet Early White Bush, one packet Hubbard; tomatoes, one packet each Spark's Earliana, Chalk's Early Jewel, Stone, Dwarf Champion; spearmint, one packet.

A summary of the labor account of the garden for 1909 showed: Team work,

plowing, harrowing and leveling, nine and one-quarter hours; one horse work, cultivating, seven and seven-twelfths hours; hand work, planting, cultivating, spraying, weeding, thinning and layering strawberry runners, thirty and seven-twelfths hours; a grand total of forty-seven and five-twelfths hours of labor.

A carefully kept record of the amount of production in each variety, together with the market value of each, follows:

Beets, Crosby's Egyptian and Edmond's Early, 8 dozen	\$ .80
Carrots, Chantenay, 66 dozen	3.30
Lettuce, Dwarf White Heart and Deacon, 105 heads	2.75
Radish, Scarlet Turnip, Rapid Red, French Breakfast and First in Market, 42 dozen	8.40
Peas, Best Extra Early, Prosperity, Improved Senator, Mammoth Melting Sugar and Nott's Excelsior, 238 pounds	11.90
Parsnip, Improved Guernsey, 25 dozen	1.25
Parsley, Emerald, fair supply	
Potatoes, early and late, 1,458 pounds	12.15
Popcorn, Burpee's Golden Tom Thumb, 21 pounds	1.26
Corn, Crosby's Early Twelve-Rowed and Burpee's Early Cosmopolitan, 32 dozen	3.50
Onions (from seed), Giant Gibraltar and Red Wethersfield, 152 pounds	1.90
Onions (from sets), Globe, 10 dozen	.50
Salsify, Sandwich Island Mammoth, 20 dozen	2.00
Beans, Improved Refugee, Extra Early Red Valentine, Burpee's Stringless Green Pod and Dwarf Horticultural, 160 pounds	9.60
Sweet Corn, Golden Bantam, 33 dozen	3.20
Cabbage, Early Jersey Wakefield and Sure Head, 370 pounds	3.70
Cauliflower, Burpee's Dry Weather and Burpee's Best Early, 33 heads	1.65
Tomatoes, Spark's Earliana and Chalk's Early Jewel, 422 pounds	10.55
Strawberries, Marshall, Haverland, Clark's Seedling and Senator Dunlap (all blossoms removed)	
Muskmelon, Burpee's Fordhook, 4 dozen	1.35
Cucumber, Burpee's White Spine, 194 slicing, 1243 pickling	6.50
Squash, Hubbard and Early White Summer, 170 specimens	6.36
Pumpkin, Small Sugar, 147 specimens	1.46
Rhubarb, 1½ dozen	.15

Total value of product.....\$98.38

To team work, 9¼ hours at \$4 per day	\$ 3.70
To work with one horse, 7½ hours at \$2.50 per day	1.90
To hand labor, 30½ hours at \$2 per day	6.11
To insecticides	1.00
To garden seeds	4.70
To raising plants	1.75

Total expense.....\$19.16

Total net profit.....\$79.22

Using the experience of both seasons the following cultural suggestions on farm garden crops, with recommended varieties, are offered:

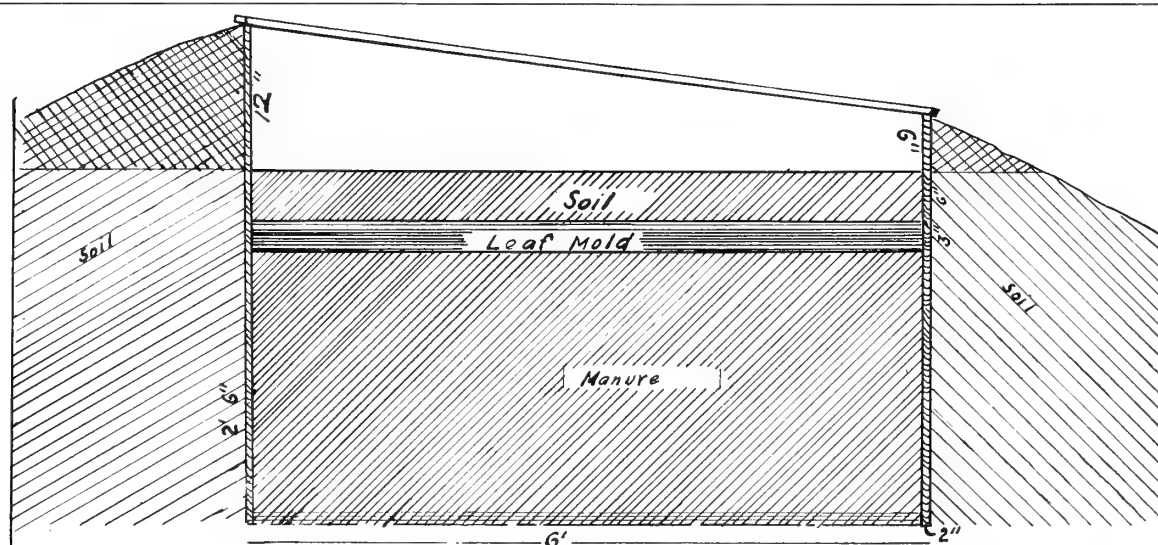


FIGURE 10—CROSS SECTION OF A HOTBED





FIGURE 6—POTATOES. NOTE SIZE AND SMOOTHNESS

Asparagus is a perennial plant and should be planted in the garden at one side, where it will not interfere with general cultivation. Every fruit grower's garden should have its asparagus bed. It is one of the earliest plants in spring; a very heavy producer and responds readily to fertilization, warmth and sunshine. While asparagus prefers the lighter, loamy soils, it will do well in almost any part of the country where gardening can be conducted. When once established an asparagus bed is good from fourteen to twenty years. It is, therefore, important that the initial preparation of the bed be thorough. Strong two-year-old roots can be secured from almost any reliable seedsman. These roots may be set either in fall or early spring, according to local conditions and circumstances on the farm. When preparing the bed furrow out the rows from six to eight inches deep, four to five feet apart, and set the plants in the bottom of the furrow fifteen inches apart. Cover firmly with soil. A liberal supply of well rotted manure should be used in preparing the bed, and may also be used as a top dressing. If the plants are set in the fall there should be considerable cutting the following spring. The young tender shoots should be cut from two to three inches under the soil. Do not injure the crown of the plant. The cutting season should last from one to two months. During this period all shoots should be removed. Cutting should cease when the plants become tough and stringy. Cultivation should then be given during the remainder of the season in order to secure a strong development of the plants which will insure a heavy crop for the following year. Cut and burn the tops when they begin to die. It is generally found advisable to give the bed a good top dressing of manure at this time, which may be forked in early the following spring. Keep the bed clean at all times. Varieties: Conover's Colossal, Barr Mammoth and Columbian Mammoth White, Burpee.

With the exception of the Limas, most all beans do well where vegetables can be grown. Beans should be planted on warm, rich, deep, moist soil as soon as danger of frost in spring is over. By

successive plantings a continuous supply may be secured from early summer to late fall. Later plantings of beans may be made in the garden in the space occupied previously by such plants as radish, lettuce, beets, etc. Beans are less stringy, and consequently more tender when grown rapidly in a favorable spot. It is, therefore, important that they be given the best possible conditions. Beans should be planted in rows to permit horse cultivation. The gardener will have no difficulty in making a satisfactory choice of varieties, as most seed houses carry a large assortment. Varieties: Improved Prolific Black Wax, Thorburn; Extra Early Refugee, Bismarck Black Wax Prolific, Dwarf Horticultural, Stringless Green Pod, Burpee; Early Warwick, Henderson.

The garden beet gives best results in deep, cool, loamy soils. Seeds may be sown as early as the ground can be worked. They are sown in drills and thinned to five inches in a row. In the fruit grower's garden they should be sown in rows sufficiently far apart to admit of horse cultivation. They can be secured any time during the year, according to the way they are handled. Beets for table use should be of medium size, tender, sweet and fine in texture. They should be grown rapidly to secure the desirable qualities. The large, poorly grown specimens are not good for table use. In fact, the extra large specimens of most all vegetables are not as desirable as the medium, quickly grown ones. Beets can easily be held for winter use in the average cellar. Beets make a fine crop for successive planting. They can be sown as a companion or succession crop only where the climate is warm enough to grow more than one crop during the season. Beets planted thickly in the row can be thinned out for use as greens before any

damage is done. The long varieties are the best adapted for winter use, and the round varieties for early use. Varieties: Eclipse, Edmund Blood Turnip, Thorburn; Crosby's Egyptian, Blood Red, Burpee; Dreer Excelsior, Dreer.

Brussels sprouts deserve more attention than it usually receives in most gardens throughout the country. The little sprouts borne in great profusion in the axils of the leaves are a great delicacy and represent a choice dish of the cabbage family. They are cooked similar to cabbage. They are very hardy and may be left out until freezing weather begins. Light freezing does not injure this plant, and it is thought by many that freezing improves it. The plants may be started in the hotbed and handled similar to cabbage. There are many varieties of Brussels sprouts, but one will have no difficulty in securing a satisfactory variety, as most all of them are desirable. Varieties: Scrymger Giant, Farquhar; Long Island Improved, Burpee.

Cabbage can be started under glass or in a hotbed about the first of February and transplanted to the garden for early cabbage. They should be transplanted when the seedlings show the third leaf. Grow them rapidly, harden off and transplant to the open ground as soon as weather permits in spring. Nothing but strong, stocky, well grown plants should be set. Most members of the cabbage family are easily handled. Cabbage should be set on a rich and moist section of the garden. It delights in a cool, deep, moist soil. Give cabbage plenty of room by putting the rows four feet apart, and one and a half to two feet in the row. The early varieties require less space than the late flat types. The early crop



Photo by C. C. Vincent

FIGURE 5—SALSIFY, VALUELESS WHEN ROOTS ARE BUNCHED LIKE THIS



may be followed by late beans, spinach, beets, etc., if so desired. The cabbage plant should be left in the ground until the head has fully developed if the maximum yield is desired. They may be left in the ground until late in fall. Cabbage can very easily be stored for winter use. The plants are pulled and the heads placed in a trench, with the roots upward, and covered with a sufficient mulch of coarse material and earth to prevent severe freezing. Cabbage can be successfully stored in a good cellar if one can be secured. It may be expected to do well where gardening can be successfully conducted. Varieties: Extra Early Express, Early Jersey Wakefield, Early Winigstadt, Surehead, Burpee; American Drumhead Savoy, Henderson.

Carrots do well on most any garden land, but prefer a moist, deep, loamy, friable soil. The gardener should try to grow the carrot quickly in order to secure tender, sweet, uniform specimens. Avoid hard, dry, crusty soil. Seeds may be sown in rows by using a hand drill. Have the rows wide enough to admit horse cultivation. When the plants have grown three to four inches high thinning should be done, leaving only the larger plants in the row from four to six inches apart. The seed should be thickly sown, for many may not germinate. Carrots should be sown early, as the crop, especially the late varieties, requires a

long season. The carrot, like most all root crops, responds readily to frequent cultivation. Only the table varieties should be grown in a home garden. By judicious choice of varieties carrots may be enjoyed for a long season. The late varieties can be left in the ground until freezing weather begins, when they should be dug and stored in the cellar or buried in the field similar to cabbage. Varieties: Carentan, Thorburn; Golden Ball, Chantenay, Danvers Half Long,

Burpee; Henderson Intermediate, Henderson.

The general requirements of the cauliflower are practically the same as for the cabbage. It delights in a moist, cool, deep, loamy soil and responds readily to frequent cultivation. It thrives best in cool and moist summers. One should endeavor to secure fresh seed each year. It can be sown in a hotbed and handled similar to the cabbage plant. To secure the most delicious specimens of cauliflower it is essential that the plant be grown rapidly and the leaves tied or broken in such a manner to inclose the head to secure complete blanching and crispness. The gardener should learn by testing under his own conditions which are the most desirable for him to grow. It should be grown quickly in order to secure sweet, tender heads. Set it in rows wide enough to admit horse cultivation and from twenty-five to thirty inches in the row. Varieties: Best Early, Burpee's Dry Weather, Burpee; Extra Early Snowball, Henderson; Gilt Edge, Thorburn.

Celery delights in a moist, deep, cool soil. Well drained swamp or low lands are especially adapted to the culture of celery. However, most any good garden soil where moisture can be secured, and with the proper handling, celery can be raised. Sow the seed in a hotbed or flats in the greenhouse about the first of April and transplant once or twice before setting in a permanent place. Celery seed is small, rather difficult to germinate, and fresh seed should be obtained each year. Especial care should be given to the kind of soil used in germinating celery seed. Such factors as light, air and watering should be carefully looked after. The seed should be very lightly covered. Usually the seed bed or flats in which the seed is germinating should be partially shaded in order to prevent excessive evaporation and baking of the soil. Avoid excessive watering while the plants are in the propagating bed. See that the ground for celery is deeply plowed, fertilized and put in the best condition before setting the plants. Celery delights in liberal applications of manure. There are several methods of planting celery, but for planting in a fruit grower's garden

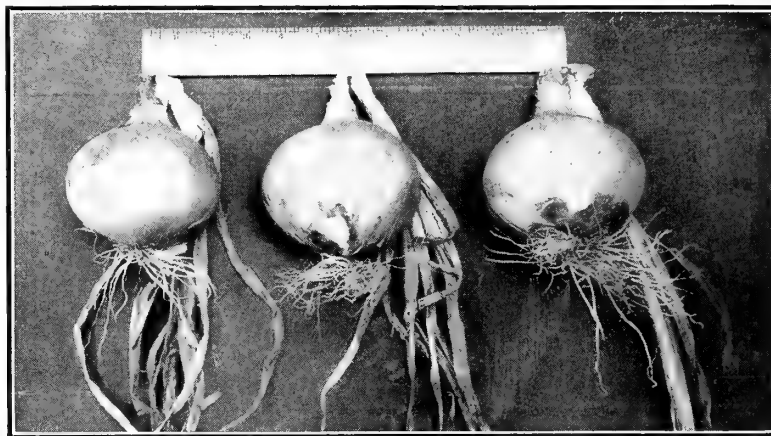


FIGURE 7—ONIONS



FIGURE 8—TABLE BEETS

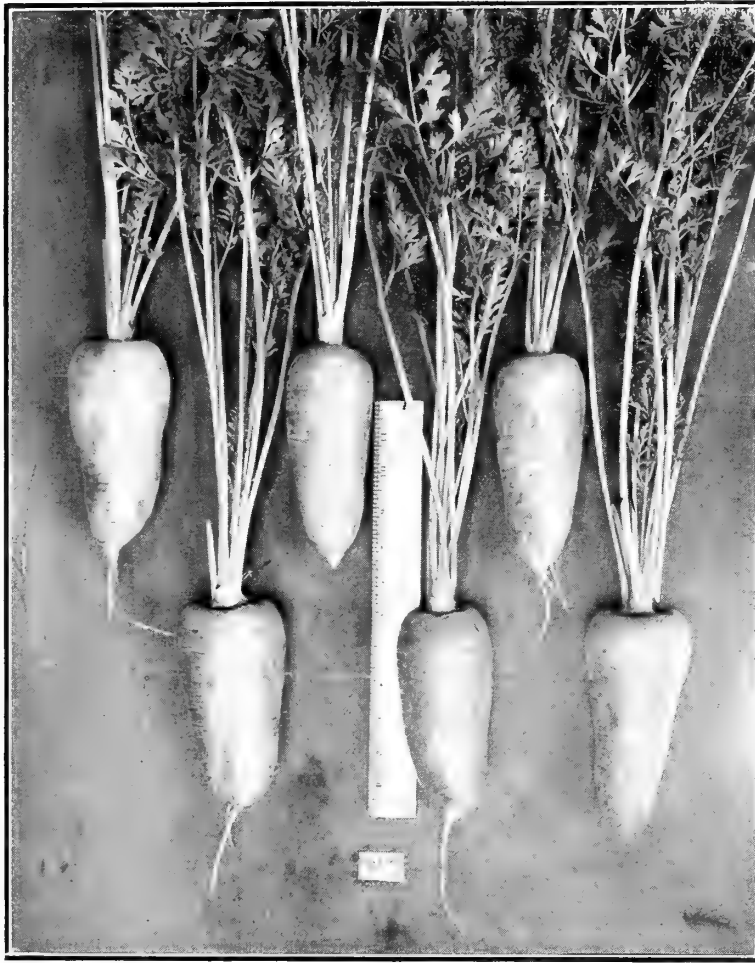


FIGURE 9—CARROTS

do not injure the vines, as such injury lessens the yield materially. Remove the cucumbers by using a sharp knife. Cucumbers for slicing purposes should be grown rapidly, medium in size and well filled at both ends. Selections from the White Spine type are very desirable. Varieties: Extra Early White Spine, Fordhook Pickling, Burpee; Cumberland, Thorburn 1896 Pickler, Improved White Spine, Thorburn.

The culture of egg plant is quite similar to that of the tomato. For further details of culture see tomato. Varieties: Black Beauty, Early Long Purple, Burpee; Early Dwarf Purple, Thorburn.

Kale is a member of the cabbage family. It deserves more attention and should be planted more frequently in the garden. It makes an excellent plant for furnishing a liberal supply of greens during the fall, winter and spring. It is quite hardy. It should be grown and handled like cabbage in every respect. Kale will stand the winter nicely and is thought by some that the quality is improved by freezing. It can be successfully grown where cabbage does well. It is very easily grown. Varieties: Tall Green Curled Scotch, Dwarf German, Burpee; Curled Dwarf Green Scotch, Thorburn.

The culture of the leek is practically the same as for the onion. The flavor is not so strong. It usually requires the entire season to mature, but may be used green like onions. It does not form a bulb like the onion. By planting leek in an open furrow, gradual filling may be practiced which will secure a greater blanched portion than by planting on the level like onions. Leek deserves to be more generally planted in the garden. Varieties: Large Rouen, Thorburn; Long Mezieres, Burpee.

For best success with lettuce the soil should be in fine condition. This plant responds readily to fertilization. The best plants may be obtained by sowing the seed in a hotbed and transplanting once before transferring to the field. This method will insure a continuous growth of crisp, succulent plants. The growth should never be checked, as it makes tough, bitter lettuce. Frequent cultivation should be given. A large amount of moisture is desired throughout the season. The many varieties of lettuce may be divided into two classes—cabbage or head lettuce and Cos or Romaine. If one cares to plant Cos varieties they should see that the outer leaves are frequently tied up in order to blanch the inner leaves. This lettuce is highly recommended and deserves more attention in Western gardens. It is a great delicacy when well grown, but very undesirable when proper care is not given. Varieties: Deacon, Grand Rapids, Denver Market, Triannon Cos or Romaine, Burpee; All Heart, Dreer.

The culture of muskmelon and watermelon plants is essentially the same as for cucumber, except they require more room. By choice of varieties a very fine selection of both may be secured. Varieties: Fordhook, Netted Gem or Rocky

it should be placed in rows far enough apart for horse cultivation. The ground may be furrowed out and the plants set in the bottom of the trench six to eight inches apart. As the plant develops the soil should be drawn around to secure proper blanching. The plants may be severely cut back when transplanting to the field. Banking with earth should be done several times during the growing period, care being taken to hold the tops of each plant together in such a way that earth will not be placed in the heart of the plant. Frequent and copious waterings are essential to secure a tender, sweet, crisp growth of celery. Celery may be enjoyed from early winter till the following spring. It can be successfully kept by standing the plants upright in a few inches of soil in the cellar, or may be stored in the field by covering with boards and sufficient soil to prevent severe freezing. Varieties: Golden Self Blanching, White Plume, Boston Market, Burpee.

Corn is so well known that it needs no further comment here. A succession can easily be had by frequent plantings or by using varieties which mature at different periods. By planting corn in rows wide enough for horse cultivation a crop may be secured with very little attention other than frequent cultivation. Corn should be planted on warm, early soil. There are many varieties of sweet

corn. For table use those varieties should be chosen which mature quickly, contain a large percentage of sugar and are tender. Corn should not be planted until the ground is well warmed in spring. Plenty of seed should be used, as the weaker plants and suckers can be removed. Varieties: Cory Early, Golden Bantam, Burpee; Manhattan, Early Marblehead, Early Minnesota, Thorburn.

Cucumbers may be sown in hills as soon as the ground is sufficiently warm in the spring. They delight in a friable, rich soil and frequent cultivation. By keeping the fruit from maturing larger yields may be secured. By the use of the hotbed or forcing hills early plants may be obtained. If plants are grown in the hotbed and transplanted they should be carefully "hardened off" before being transferred to the garden. Hills may be set four by six feet or six by six feet, as the space permits. Careful preparation of the soil in each hill should be given. It is often found advantageous to dig the hole two feet across and one foot deep, incorporating a liberal supply of horse manure. Do not plant the seed directly in a bed of manure. Plant the seeds about one and one-half inches deep. Firm the soil lightly after planting. Cucumbers should be planted level, and not on mounds as sometimes practiced. See that no more than four plants grow to each hill. While picking cucumbers

Ford, Kleckley Sweets, Cole's Early, Fordhook Early, Burpee.

By judicious planting a fine supply of onions may be secured throughout the season. Seed may be sown in drills in spring as early as the ground can be worked. If one desires onion sets may be planted for early green onions. The onion is essentially a surface feeder. It should be grown in rich, friable soil, with plenty of plant food near the surface. Frequent and shallow cultivation is essential to preserve moisture until the onion begins to mature. The bulbs should not be allowed to stand closer than five to six inches in the row if best results are expected. If the bulbs are not maturing in time to be harvested in fall before inclement weather begins the tops should be bent over to hasten maturity. See that the onions are well matured and dried before storing for winter use. There are many varieties of onions. One will have no difficulty in choosing varieties adapted to local conditions and personal preferences. Varieties: Oregon Yellow Danvers, Spokane Seed Company; Red Wetherfield, White Portugal, Philadelphia Silverskin, Burpee; White Queen (fine for pickling), Thorburn.

Parsnips, like other root crops, require a deep, loose soil in order to develop a long, smooth and shapely root. Seed may be sown in drills where the plants are intended to grow and covered with three-fourths of an inch of soil. Sow the seed rather thickly and thin plants to four inches in the row. Parsnips require the entire season for their full development. They may be dug in late fall, topped and stored similar to carrots. They may also be left in the ground over winter. The hollow crown varieties are not as desirable for leaving in the ground as those with a smooth shoulder. If the roots are to remain in the ground over winter it is advisable to give them a light mulch of coarse strawy material. Varieties: Hollow Crown,

Improved Guernsey, Early Short Round, Burpee.

A few specimens of parsley should be found in every garden. It is not difficult to grow and is very productive. A large amount of tender foliage may be gathered for garnishing throughout the year. Varieties: Emerald, Burpee; Extra Curled, Thorburn.

The first sowing of peas should be made very early. By a judicious choice of varieties and succession planting peas may be enjoyed for a long period each year. Their culture is not difficult. For the fruit grower's garden it is seldom wise to use tall growing varieties which require staking. A liberal supply of seed should be sown about three inches deep. One will have no difficulty in choosing varieties and there is a large list carried by most seed houses. The essential thing for the home gardener to bear in mind is to have a succession of peas throughout the season which do best under his climatic conditions. This may be secured by several plantings or by planting early, medium and late varieties. Varieties: Nott's Excelsior, Prosperity, American Wonder and Horseford's Market Garden, Burpee.

The Irish potato is here mentioned only as a garden crop. It is usually not well to take the space except for early varieties. The main crop is generally grown on other sections of the farm. By plowing the ground as soon as it is fit to work in spring tubers may be had about the time the first crop of peas is harvested. If one is anxious to have extra early potatoes seed may be sprouted in shallow boxes. These sprouts are carefully preserved and transplanted to the ground with a liberal portion of seed attached. Choose smooth, medium size uniform tubers which are typical of the variety. Always pay attention to the selection of an ideal type when securing potatoes for seed. A great deal can be accomplished in maintaining or improving the potato by securing superior

strains through selection. Varieties: Early Rose, Carman No. 3, Early Ohio and Rural New Yorker.

The radish, like other root crops, delights in a moist, rich, friable soil. They should be grown rapidly without a check. Several plantings should be made in order to secure choice radishes for a long period of time. Seed is sown in drills as soon as the ground can be worked in spring. The radish is a fine crop for succession planting. Varieties: French Breakfast, Scarlet Turnip, Icicle, White Vienna, Burpee.

Salsify is a most excellent plant when well grown. It is commonly spoken of as vegetable oyster. The culture of this plant does not differ from that of other root crops like carrot or parsnip. (See Figure 5.) Variety: Sandwich Island Mammoth, Burpee.

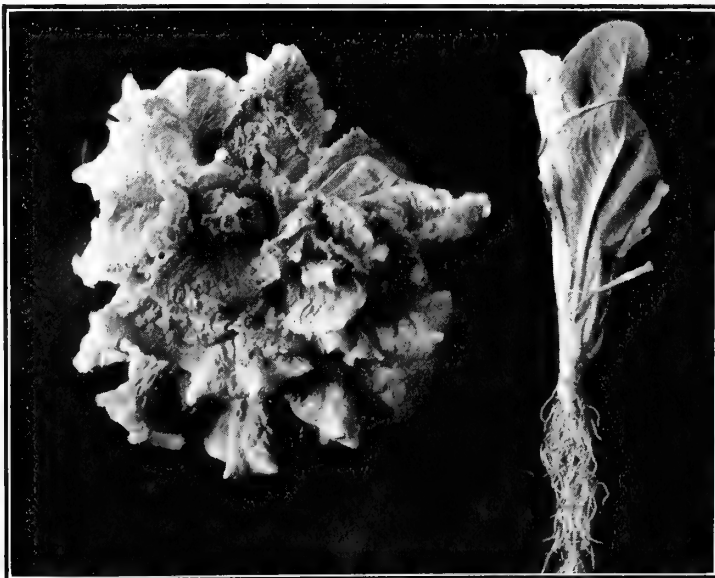
Spinach is highly prized as a pot herb. It is very easily grown. Spinach grows rapidly and several crops may be secured during the season. The culture of this plant is practically the same as for lettuce. It makes a fine companion or succession crop. Varieties: Long Standing, Victoria, Burpee; Curled Leaf Savoy, Thorburn.

For details of culture of squash see cucumber or pumpkin. Varieties: Early White Scallop, Bay State, Thorburn; Early White Bush, Hubbard, Burpee.

It is essential to have the tomato plants grown in a hotbed or greenhouse in order to secure large, strong, stalky plants. The tomato is susceptible to early and late frosts, which shorten its growing period materially. The plant should be as large as possible when transplanted to the field. Endeavor to lift each plant without loosing the soil or molesting the roots. If they are carefully handled while being transferred to the field they should not receive a check to their growth. Fruits may be ripened early by training the vines to one or two stems and supporting them by means of a stake or trellis. The most serious drawbacks to tomato culture are frosts, droughts and the various blights. The tomato has been trained in various ways to secure maximum yields and earliness. Probably the most satisfactory way for the handling in the fruit grower's garden is to plant them in rows five feet apart, four in the row, and tie them to a stake. Side shoots should be removed. The tomato delights in frequent cultivation. Varieties: Spark's Earliana, New Stone, Livingston; Atlantic Prize, Thorburn.

Some useful garden literature may be obtained free by addressing the Secretary of Agriculture, Washington, D. C. The following is a list of farmer's bulletins of interest to a home gardener:

35, Potato Culture; 39, Onion Culture; 61, Asparagus Culture; 62, Marketing Farm Produce; 68, The Black Rot of the Cabbage; 76, Tomato Growing; 91, Potato Diseases and Their Treatment; 94, The Vegetable Garden; 121, Beans, Peas and Other Legumes as Food; 138, Irrigation in Field and Garden; 148, Celery Culture; 203, Canned Fruits, Preserves and Jellies; 220, Tomatoes; 231, Spraying for Cucumber and Melon Diseases; 254, Cucumbers; 255, The Home Vegetable Garden; 256, Preparation of Vegetables for the Table; 263, Practical Information for Beginners in Irrigation; 282, Celery; 289, Beans; 295, Potatoes and Other Root Crops as Food; 354, Onion Culture.



HEAD LETTUCE

# SOME INSECTS AND MITES ATTACKING THE PEACH

BY GEORGE P. WELDON, EXPERIMENT STATION, FORT COLLINS, COLORADO

THE novice in the business of growing peaches in Colorado very often begins with a mistaken notion that peach trees require no spraying. That notion has probably grown out of the fact that in the early history of orcharding in the state spraying for the control of insect pests was confined almost entirely to apples. While the spraying of peach trees may not be necessary every season there are times when certain sprays are necessary in order that destructive pests may be controlled. One who hopes to make a success growing high grade fruit must resort to spraying whenever the prevalence of some insect pest demands it. It would not be wise to lay down set rules for the spraying of peaches, for there are too many factors that may bring about a marked increase or decrease in the numbers of certain pests occurring from season to season. For example, last spring a very severe infestation of the common green peach aphid in the peach growing sections of Colorado made it necessary that stringent methods of spraying be adopted. The previous spring the occurrence of this pest was very general, but it was not abundant enough in most orchards so that it was necessary to spray for its control. Often a dormant spray of lime and sulphur or soluble oil is beneficial in orchards where certain pests may be spending the winter. Too much, however, should not be expected of dormant sprays, and while there are insects that they may control very effectively there are others that will be controlled but partially or not at all. Very often the orchardist who uses a lime and sulphur spray seems to lose sight of this fact, and because the spray does not meet

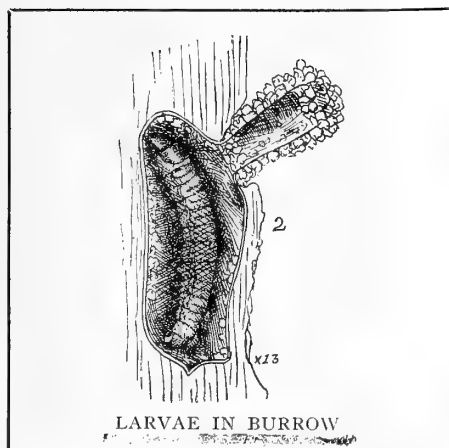
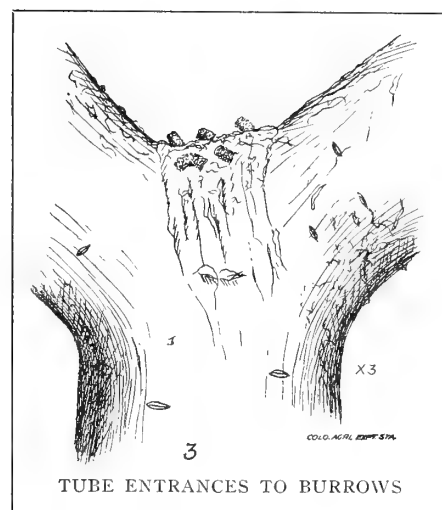
it is not a seriously injurious pest every season there are seasons when it becomes exceedingly destructive, and is responsible for a great financial loss to those peach growers who do not adopt proper methods of control.

The adult of the twig-borer is a tiny, dark gray moth. It is an Old World species, supposed to have come to us with the peach from Western Asia, and has been known in the United States since 1860. The twig-borer is principally an enemy of the peach, and usually we hear of it in connection with its damage to this fruit. It may be found, however, on all stone-fruit trees, but shows a decided preference for the peach. In Bulletin 80 of the United States Department of Agriculture Dr. Marlatt mentions the pear among its list of food plants. The writer has never noted the attack of this insect upon other than stone-fruit trees. Its occurrence on the pear or other pome fruits is probably rare, and might be compared to the occurrence of the codling moth, which is almost exclusively an enemy of the pome fruits, in plums, peaches or other stone fruits. While cases of codling moth infesting stone fruits in any numbers are rare they were found the past season so plentiful in Burbank plums of a certain orchard that they were really doing considerable damage. The twig-borer, during a season of abundance, might occasionally modify its habits to the extent of an occasional attack upon pome fruits, as the codling moth in a season of abundance may modify its habits and occasionally attack stone fruits.

The larvae, as is shown in Figure 1, hibernate in little silk-lined chambers constructed within the bark and very close to its surface. Mr. Warren T. Clarke, in California Experiment Station Bulletin 144, states that "in the majority of cases they are found just beneath a thin layer of the greener cells, just below the brown bark, while the greater part of the burrows is in the yellowish portion of the cambium." He also states in connection with the winter burrow within the bark that "the position generally chosen on the tree for the purpose is the crotch formed where the new wood joins that of the previous year, though older crotches are occasionally selected." In Colorado I have found them almost entirely in the older crotches, and always, when found there, they have been in the brown portion of the bark, just as close to its surface as the hibernacula could be constructed. Occasionally the hibernating cells containing larvae have been found underneath buds on the new growth of peach trees. Their occurrence in this location does not seem to be at all general.

While hibernating the larvae vary somewhat in size, but are all very small, and their detection is somewhat difficult, except when very close observations are made. The presence of the larvae themselves during the hibernating period could scarcely be detected were it not

for the fact that they construct at the entrance to their burrows tiny silken tubes covered on the outside with bits of bark, which were chewed off by the larvae while excavating the hibernacula. These little tubes are shown in the crotch of a tree in Figure 3, and again one is shown at the entrance to a burrow containing larvae in Figure 2. The larval cell is also lined with silk, the silken tube being merely a continuation of this cell lining. Throughout the winter months the hibernating larvae remain inactive within this cell. Apparently no feeding is done after the time that they construct the cells until they leave in the



with his expectations in controlling some certain pest he condemns it for all of them. As a matter of fact he probably was paid for its use in the destruction of some other pest.

One of the most common enemies of the peach in the United States is the twig-borer or "bud worm," as it is sometimes called. Its occurrence has been reported from most of the peach growing states of the Union, both in the East and West. In Colorado it has been known for a number of years, and while

spring, consequently no growth takes place during that time. A hibernating larva, magnified twenty-six times, is shown in Figure 1. These larvae are exceedingly well protected in their hibernacula, and Mr. Warren T. Clarke's experiments in California show that they are almost impenetrable to even an oil spray during the winter season.

In the spring of the year, about the time the peach trees bloom, the larvae leave their winter quarters and eat into the tips of the twigs, either beginning their work at the extremities or a short distance below, sometimes hollowing them out for usually a distance of less than an inch from where the twig was entered, leaving a mere shell or hollow cylinder of the portion in which they have fed. Again, they may merely gouge out the tip of a twig on one side, entering in as far as the pith and then leaving for some other twig. Thus they go from twig to twig, feeding first in one and then in another, until often the tips of a great many branches will be killed back, thereby checking their growth and more or less injuring the tree. The detection of their work is no difficult matter a short time after they begin feeding, for the leaves of affected twigs soon wilt and later dry up from the injury done to them.

The injury the first brood larvae do to twigs, while sometimes alarming, is not usually to be compared with the injury to the fruit from the second and



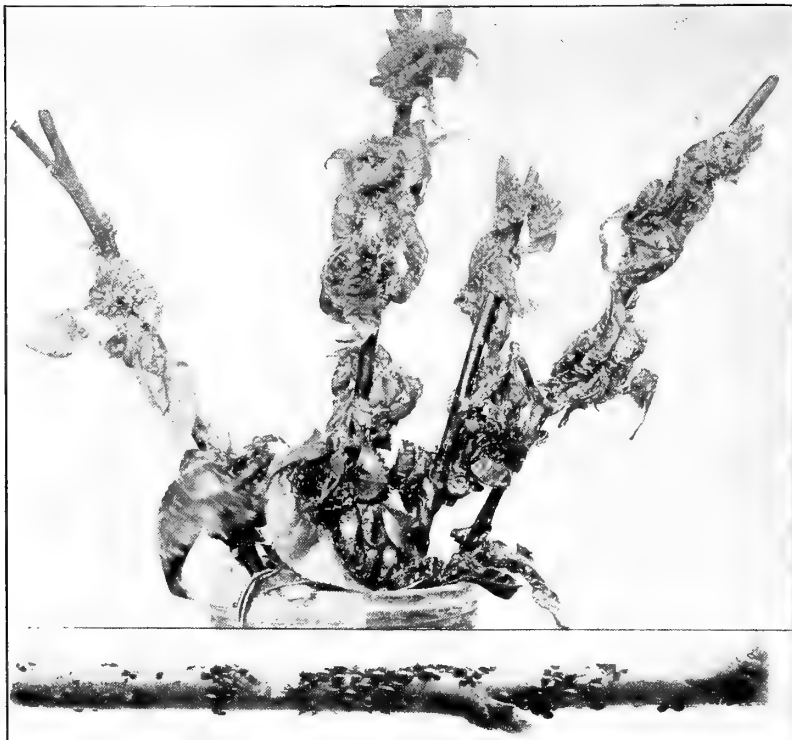


FIGURE 4—PEACH LEAVES CURLED BY GREEN PEACH LOUSE  
FIGURE 5—BLACK PEACH APHIS ON TWIG IN EARLY SPRING



FIGURE 6—TWO GREEN PEACH LEAVES AND TWO  
FADED, CAUSED BY ATTACK OF BROWN MITES

third broods. Often this injury to the fruit is extensive enough to render great quantities of it unmarketable, and we have a condition of peaches comparable to that of apples as a result of codling moth attack. The larvae usually enter the fruit from the stem end and may feed entirely within the flesh, but very often they eat their way into the pits. Affected peaches may be detected by an issuance of sap mixed with little pellets from the fruit which have been chewed up by the larvae. This sap hardens on the outside and peaches so affected are often termed "gummy peaches."

The pupal stage of the insect is said to last from six to twelve days, the first brood remaining pupae for the longest time. This period is passed by the first brood pupae, according to Mr. Clarke, principally in curls of bark on the trunks of trees. They may, however, be found in other places, such as between two peaches which come in contact with each other, under rubbish on the ground, etc. The cocoon which they make is a very flimsy one; in fact so much so that in reality it should not be termed a cocoon. A few strands of silk are spun by the

The twig-borer moth is a tiny gray insect about one-quarter of an inch in length, and having a wing expanse of about one-half inch. It is quite a beautiful little moth with its dark gray, fringed wings. They are very seldom seen in the orchards by the fruit growers because of their small size, their close resemblance to projections of the bark and their habit of resting perfectly still during the daytime on the trees.

Eggs of this insect were first found by Dr. Marlatt, who kept the moths in confinement and found that they were deposited above the bases of the petioles of the leaves. Mr. Clarke, in California, found the eggs of the first brood in the orchard in the same location as described by Marlatt. He found, however, that the eggs of the second generation of moths were laid not on the twigs, but on the fruit and in the edge of the stem end depression; the eggs of the third generation were found in cracks of the bark or exposed on its surface just above the crotches formed by the new wood and on the old wood.

The eggs are pearly white, changing to a deep yellow before hatching. They are quite conspicuous, being about one-sixtieth of an inch in length. These observations of the egg and egg-laying habits of the insect, made in California by Mr. Clarke, are very interesting, as they are the first recorded from studies made under the natural conditions of the orchard.

The experiments testing the different insecticides for the control of this pest were all conducted in the spring of 1910, and were combined with the green-peach aphid experiments recorded here, with the discussion of the latter pest.

The comparative scarcity of twig-borer the past season made it difficult to secure

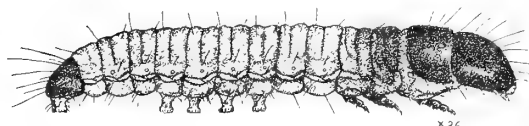
much reliable data from the experiments.

The following table, compiled from data gathered in the W. C. Strain orchard at Clifton, Colorado, gives the results attained with different insecticides in controlling the peach twig-borer:

Insecticides Used	Strength Used	Wilted Tips	Trees Examined
Black Leaf .....	1-20	5	3
Black Leaf .....	1-40	6	3
Black Leaf .....	1-50	3	3
Black Leaf .....	1-70	0	1
Black Leaf "40" .....	1-600	0	2
Black Leaf "40" .....	1-800	7	4
Black Leaf "40" .....	1-1000	6	4
Lime and Sulphur .....	1-10	0	12
Lime and Sulphur .....	1-11	0	12
Soluble Oil .....	1-20	4	2
Unsprayed .....		16	4

Trees sprayed March 7, examined April 26.

While it is not thought that this year's experimental work with twig-borer would justify the drawing of many conclusions there were at least some helpful hints gathered in regard to its control. It may be seen that "Rex" lime and sulphur gave perfect results. More trees were sprayed with the "Rex" mixture 1-10 and 1-11 than with any other insecticide, yet in a very careful examination of twelve trees by Mr. Strain and myself we failed to detect the presence of a single wilted twig because of the work of the borer. On four check trees in the same block sixteen wilted tips were counted, and on twenty-two sprayed with tobacco preparations and soluble oil thirty-one wilted tips in all were counted. One tree sprayed with Black Leaf 1-70 was free from wilted tips, and also two trees sprayed with Black Leaf "40" 1-600. The fact that the higher strengths of Black Leaf did no appreciable good would indicate that it was simply a matter of chance that the one tree sprayed with the weaker strength indicated good results. Black Leaf "40" 1-600 apparently gave good results, however, because of only two trees having been treated,



THE LARVAE

larvae, and to these strands the pupae is attached by means of hooks at the tip of the abdomen. The second and third brood pupae more often pupate in the suture at stem end of peaches than underneath the bark, and the semblance to cocoons is even less than in the case of the first brood.



and because of the scarcity of the twig-borers in the orchard it would not be wise to draw any definite conclusions without further experiments. The number of trees treated with lime and sulphur and their total freedom from borers seemed great enough when compared with the small number of check trees and other sprayed trees with quite a number of borers to justify the conclusion that "Rex" lime and sulphur is a perfectly effective spring remedy for this pest. For some unknown reason home prepared lime and sulphur used at the same time as the "Rex" spray, but in another orchard, apparently did very little good.

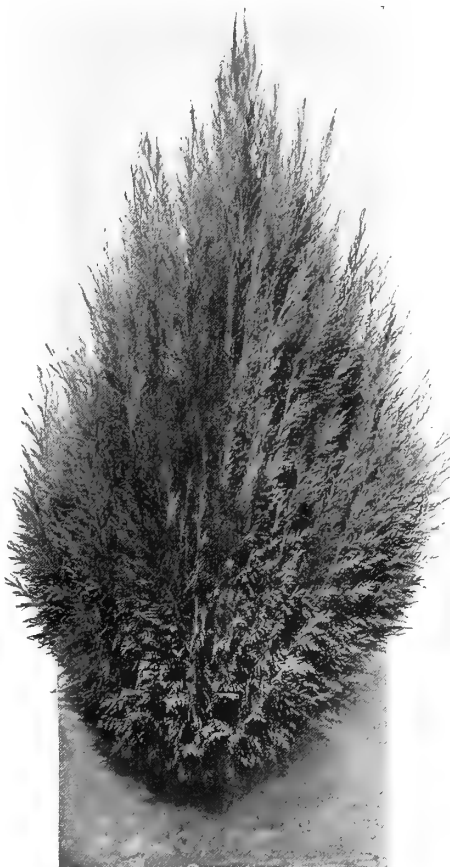
Mr. W. T. Clarke, in bulletin 144 of the California Experiment Station at Berkeley, gives some interesting data in regard to sprays applied at different times of the winter and spring for the control of twig-borer. He found that during the winter season the little larvae, in their hibernating cells, could not be killed either with kerosene emulsion or lime and sulphur. He discovered, however, that the larvae become active in these cells for some time in the spring before emerging, and that during this period of activity the cells are rendered more or less permeable to a spray, and then the larvae can be successfully combated with a contact insecticide. In regard to the effective use of a spring spray of lime and sulphur Mr. Clarke says: "The lime-salt-and-sulphur-sprayed trees, when the spraying had been done in the early spring, showed the most satisfactory results of any at the time of examination. On the various station orchards, comprising over 12,000 peach trees, the average number of bud worms was about one to every ten trees, and this average was maintained on many orchards in the district. Indeed, it was a difficult matter to find the worms in these orchards, and it was only by the closest scrutiny of the trees that they could be located in them. The general condition of these trees was excellent and a marked absence of 'curl-leaf' was noted. An examination of the trees in one orchard that had been sprayed with the lime, salt and sulphur early in February showed that the attack of bud worms was severe. On many of the trees from which we cut the worms we found from five to nine to the tree. The general condition of the trees was good and a very small amount of 'curl-leaf' was present."

From this season's experiment at Clifton, from the experience of the many Colorado orchardists who have used lime and sulphur for the control of this pest and from the apparent success of this spray in California, we feel justified in recommending it for use in sections where there is injury from twig-borer.

While arsenate of lead was a total disappointment in this season's test it has previously been used with good success, and is no doubt effective when applied at the proper time. E. P. Taylor, in his annual report of the Western Slope Fruit Investigations for 1906, gives some very satisfactory results from the use of five pounds of arsenate of lead to fifty gal-

lons of water, applied on April 14, at which time the majority of the blossom buds showed their pink tips. Commenting upon the results of his experimental work he wrote: "It may be said that arsenate of lead, applied in the spring at the time the buds of the peach are beginning to open, will control the peach twig-borer as effectively and cheaply as the lime and sulphur wash, up to this time the most universally used."

Colorado peach growers are fortunate in that they do not, as a rule, have the crown-borer of the peach to fight. In



ERECT LAWSONS CYPRESS

many of the peach-growing sections of the United States this is one of the worst pests preying upon the trees. Unlike the twig-borer, which feeds upon the tender twigs and fruit, this species feeds just beneath the bark at the crown of the tree, often girdling them. The adult insect is a moth which, at a glance, more closely resembles some kind of a bee or wasp than a moth. The eggs of this moth are deposited on the trunks of peach trees, and the little worm-like larvae hatching from them eat their way beneath the bark and there feed until full grown.

The work of the insect may be detected by masses of gum in which are mixed pellets of wood or borings which the larva chews to pieces as it feeds. These gum masses usually occur at or just below the ground line. Their presence aids in the fight against this pest, as the burrows in which the larvae feed can always be found beneath. By using the point of a knife or a piece of wire this

burrow may be followed and the larva located and killed. No better method for combating the peach tree borer has ever been devised than worming, as the above process is called, with a knife or some other implement that can be inserted into the burrow. Worming should be done both in the fall and spring. While the larvae often do not attain a sufficient size in the fall to be readily detected a great many of them can be killed before they get in very far, thus preventing the damage that they might do before they could be detected in the spring.

Various other methods of control have been tried, such as wrapping the trunks with tar paper to keep the moths from depositing their eggs, applying repellants for the same purpose and mounding the soil up above the crown of the tree. This last named method is valuable in that where it is used the larvae may be induced to enter the trunk of a tree some distance above the surface of the ground, then when the mound is removed the worms are high on the trunk, where they can be much more easily destroyed than if they were lower down.

It is very fortunate that none of the scale insects have as yet been found abundantly on peach trees in Colorado. The San Jose scale has been seen on a very few trees, but not plentiful enough to do any serious injury. This pest seems to confine its attacks more to the apple in the few orchards where it has been found. In one section of the Grand Valley a scale insect closely allied to the dreaded San Jose is found. Samples of this scale were sent to Professor T. D. A. Cockerell, entomologist in the State University at Boulder, who kindly determined it for me as the Putnam scale. Only in rare cases has this insect been found doing serious injury.

There are other scales of minor importance that are sometimes found on peach trees; all of these insects may be successfully combated with an early spring spray of lime and sulphur or soluble oil. If "Rex" lime and sulphur is used it should be diluted by using one part of the "Rex" solution to ten parts of water. A good home-made lime and sulphur is as effective as the "Rex," and should be made with twenty pounds of lime and fifteen pounds of sulphur to fifty gallons of water. Soluble oil is ordinarily used at a strength of one part of the oil to from fifteen to twenty parts of water.

While spring spraying for the control of these scale insects is probably more advantageous than a spray at any other time good work can also be done with a fall application. Very often orchardists would rather spray in the fall because there is more time to do so than in the spring.

In bulletin 152 of this experiment station an account was given of the life habits and injuries from the brown mite, and also the red spider. This mite passes the winter almost entirely in the egg stage. These eggs are tiny, red spherical shaped, glassy objects, usually deposited in or near crotches of the branches.

Hatching takes place in the spring. At first the young mites are red in color and have only six legs. Upon feeding for a short time moulting takes place, after which the mite is olive green or brown in color, and has eight legs, more or less tinged with red. It feeds principally upon the leaves, occasionally attacking the fruit, and may be detected by the faded out, pallid appearance of the foliage, dotted here and there with little black specks of excreta. Figure 6 shows two peach leaves which have been attacked and two which are normal from the same tree, and gives a good idea of their appearance after this pest has been feeding upon them.

Experiments show that tobacco preparations are of little value in controlling this mite; that they will kill the mites, but not the eggs. As the latter are almost always present on a tree where the mites are feeding such sprays can only be effective when repeated applications are made. The sulphur spray was again tested this season, this time at Palisade, Colorado. Some badly infested pear trees were treated, using ten pounds of sulphur to fifty gallons of water. Results of this test were perfect, and a week after the trees had been sprayed it was hard to find a living mite on them.

An interesting point in connection with the sulphur treatment for brown mite is: The adult mites are not immediately affected by the spray, but those newly hatched die shortly after the application. An examination of a tree the day after spraying with sulphur is usually disappointing, for the adult mites may be alive and abundant. In all the tests made a very few newly hatched, six-legged mites have been found twenty-four hours after spraying, and in a week's time neither adult nor newly hatched mites can be found. The sulphur adhering to the bark and leaves undoubtedly kills the young mites as they hatch from the eggs. Whether the older ones are killed by the sulphur or simply die a natural death is a point that has not been determined definitely. As there are probably only three broods of this mite, and they are quite long lived, it would seem that the sulphur really kills the adults, but that it takes some days to do so. The important fact remains that the young mites never develop after the sulphur treatment, whether hatched or in the egg stage at the time of treatment, and that the adult mites are either killed by the sulphur or die a natural death within seven or eight days after treatment, thus ridding infested trees of the pest. In bulletin 152 the following statement is made: "Trees may be treated while dormant with lime and sulphur. This spray has no effect upon the eggs, but probably kills the young mites as they hatch." The fact that the lime and sulphur kills young mites as they hatch was definitely established last spring at Palisade, Colorado.

Three adjoining peach orchards, each containing a great many brown mite eggs—two of them sprayed with Rex lime and sulphur 1-10 and one not sprayed—were chosen as observation

places to determine this point. The eggs were found hatching in all three orchards at the same time; in the orchards which were sprayed a great many of the tiny, red mites could be found where they had died on the limbs very soon after hatching. In no case were any found alive, except a few immediately hatched from the eggs. In the unsprayed orchard all the mites seemed to live, and the trees



ROSE DOROTHY PERKINS

were soon covered with them. Throughout the season the sprayed orchards were almost entirely free from mites, while the unsprayed one, located between the other two, had quite a serious infestation. As a result of the extensive use of a lime and sulphur spray in the Palisade section the past season the brown mite was practically exterminated, except in a few orchards where such a spray was not used.

The red spider mite differs from the preceding one in its wintering habits; instead of living over in the egg stage, as the brown mite does, this species hibernates in the soil as an adult, close to trees upon which it has been feeding or underneath rubbish of any kind. On the 7th of November, last season, they were found plentifully under burlap bands that had been applied to trees for the purpose of trapping the codling moth larvae. Hibernation begins before the cold weather sets in; the first downward migration of mites to the soil was noticed at Grand Junction last on July 26. While

a few of them may work on trees until late in the fall their damage is usually over by the 15th of August. Eggs are laid in the spring by mites that have lived through the winter. These eggs are pearly white, and may be seen as tiny specks on the under surface of the leaves.

When first hatched from the egg this mite, like the species previously treated, has only six legs, the fourth pair developing with the first moult. They are somewhat smaller than the brown mite, usually green in color while feeding upon the foliage of trees, with minute black dots on the dorsum of the abdomen. When feeding ceases in the fall, and they begin their downward migrations to the soil, they become an orange or red color. During my observations of this species of mite, for the past three years, a red one has never been seen on fruit trees until feeding ceases in late summer. In greenhouses this same species is very often red in color. Unlike the brown mite, the red spider has the power of spinning a web, and may easily be detected, when prevalent, by the presence of these webs on the foliage or branches of infested trees. The appearance of injured peach foliage is not unlike the appearance of that injured by the brown mite, but is more inclined to turn yellow in patches.

Sulphur is very successful in treating this mite also, whether dusted upon or applied as a liquid spray to infested trees. When applied in water, by means of a spray, sulphur should be very finely screened and mixed with the water by using a small amount of soap. Without the soap the sulphur will remain on the surface of the water, while with the soap it will sink to the bottom of the spray tank, and a good agitator will keep it mixed. Lime and sulphur has not proven a successful treatment for red spider, and cannot be depended upon to do effective work when used as a dormant spray. The use of tobacco preparations, as with the brown mite, result in little good.

◆ ◆ ◆

**F**OREST FIRES, one of the greatest sources of destruction to the most valuable resources of the state, will soon be restricted and their terrors largely reduced if the people will co-operate with the state forester in the administration of the new forestry law enacted by the last Legislature, which will be ready for distribution in pamphlet form in the near future. One of the most important provisions of the law is that making a closed season for burning from June 1 to October 1, during which period outdoor fires of all kinds are prohibited, except under most stringent regulations and the probability of heavy penalties. In this connection the state forester urges upon every one the necessity of doing all possible burning before the closed season begins, and thus save the trouble and risk of doing it by permission during that season of greatest danger when fire spreads so easily and rapidly. The state forester desires the assistance and co-operation of every one in the protection of property from forest, grass or brush fires, and to this end invites suggestions and information calculated to assist in any manner in the performance of his most important duties. Copies of the law will be promptly furnished to all who desire them. Requests and communications addressed to F. A. Elliott, state forester, Capitol Building, Salem, Oregon, will receive prompt and appreciative attention.

◆ ◆ ◆

*Editor Better Fruit:*

I enclose one dollar for one year's subscription for "Better Fruit." The sample copy I have is the first one that I have ever seen, and I like it so well that I must add my name to your subscription list. H. G. Fitzsimmons, San Francisco.

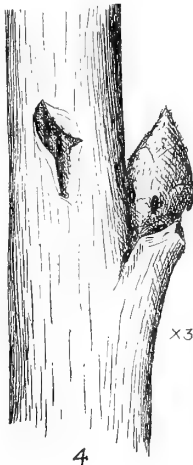
# TWO DESTRUCTIVE PLANT LICE OF THE PEACH

BY C. P. GILLETTE AND GEORGE P. WELDON, EXPERIMENTAL STATION, FORT COLLING, COLORADO

**G**REEN PEACH APHIS is the common green peach louse so prevalent early in the season curling the leaves, and often attacking the blossoms and forming peaches in a most destructive manner. The eggs of this species of plant louse are deposited on peach trees (occasionally on the other stone fruit trees) in the autumn, where they remain unhatched until early spring. Their detection is not as easy as that of the common green apple aphid egg, but is not extremely difficult when one knows where to look for them. Last fall the eggs were deposited in such large numbers that they could easily be found in a great many orchards. In some cases the buds of the peach twigs were dotted black with them. In most instances these eggs are found deposited on, or very close to a bud, and very often just as deep in wrinkles or depressions as possible, and unless they are plentiful it may require sharp eyes to detect them. When first deposited the eggs are light green in color, turning black after exposure to the air. They are much smaller than the eggs of the common green apple aphid, which nearly every orchardist has seen, but are quite similar in shape, color and general appearance. This pest may live over winter on vegetation that remains green throughout the winter season, so there would be a possibility of trees becoming infested at least late in the season from other sources, even though the eggs were all killed by an insecticide, or failed to hatch because of unfavorable weather conditions or other causes.

The eggs of this aphid hatch very early in the spring. E. P. Taylor reports having found them hatching at Grand Junction, Colorado, on the 16th day of February, 1907. The month of February that winter was unusually warm, and the extremely early hatching of the eggs was due to that fact. However, hatching takes place when the buds have scarcely begun to swell, a fact which is not generally understood by the fruit grower, and one which is of very great importance in its relation to the control of the pest by means of a spray. The past spring eggs were found hatching on the 7th of March at Clifton, Colorado, at which time the buds seemed perfectly dormant.

When first hatched from the eggs these aphids are dark green in color, and may be seen as tiny, dark specks crawling along the twigs, or more often clinging to the buds. It is probable that they can exist for a number of days after hatching with little or no food. What



4  
EGGS DEPOSITED ON  
BUD

feeding they do takes place on the buds or very tender bark into which their beaks are inserted, and from which a portion of the early flow of sap is extracted. Plant lice of the spring brood, which hatch from eggs that have remained on trees over winter, are known to the entomologist as stem-mothers. The full grown stem-mothers of this plant louse are of a pinkish or salmon color, and before there is a sign of a peach blossom in the spring, these stem-mothers have begun reproduction. Their progeny are born alive, eggs never being laid except in the fall, and then by an aphid which, though only a different form of the same species, might be taken by the orchardist for an entirely different kind of plant louse. The generation from the stem-mothers differ from the latter in that they are light green in color, with darker green, longitudinal markings on the dorsal surface of the abdomen, but are never pink like the stem-mothers. Just as soon as the buds on infested trees begin to unfold, the stem-mothers, with their progeny, are ready to enter within. At first they seem to prefer feeding in the blossoms, but after these fall quite serious injury is often done by their feeding on the leaves. Probably the greatest injury to peaches resulting from their attack consists in the dropping of the small fruit which has become devitalized from the loss of sap until it can make no growth, hence shrivels and falls to the ground. The injury to the peach is practically all done while it is yet in the husk or calyx tube. After the peach has cast off this calyx tube it is not likely to be molested further by the aphids, and unless it has been too much weakened before this time the probabilities are that it will not drop as the result of aphid attack.

Fortunately this pest cannot, or does not, spend its entire existence upon the peach or other trees, but leaves them for more succulent vegetation. Shortly after the peaches are formed, winged lice begin to appear in the colonies; these fly away to other food plants, and by the last of June very few can be found on peach trees. This is indeed a blessing to the peach grower, for should this pest continue its ravages throughout the summer on the peach it would require great effort and expense to control it. As it is trees often suffer a great loss of foliage, and if it were not for the wonderful power of the peach tree to recover after this injury the result of the aphid attack would be more disastrous.

Gillette and Taylor, in bulletin 133 of the Colorado Experiment Station, gave a list of fifty-three plants growing in the greenhouse which were found to be infested with this aphid, and twenty-five plants growing out of doors, the out-of-door plants comprising most of the common garden vegetables and weeds. The variety of plants upon which this louse feeds during the summer time is so great that it is probable that it will seldom be plentiful enough on any one

kind to do serious injury. While on the summer food plants this aphid is usually light yellow in color, and without the green stripes so characteristic of it while feeding on the peach.

The last winged generation of lice appearing in the fall are known as fall migrants because of the fact that they leave the vegetation upon which the summer has been spent and migrate to peach trees. These fall migrants do not deposit eggs, but give birth to the true sexual forms, males and females. The females are pink in color, somewhat similar to the stem-mothers which were on the trees in the spring, but smaller. After feeding for a time and becoming mature they deposit the eggs previously described.

Because of the abundance of green peach aphid eggs last winter a number of different spray tests were made in the spring with various insecticides in order to determine their value as egg destroyers. The spraying was delayed a little too long, however, and on the 7th of March, when the first applications were made in the W. C. Strain orchard at Clifton many of the eggs were found to be hatching, and there was no trouble in finding the little green lice here and there on the twigs. A great many of the eggs were not hatched at that time, hence the various sprays were tested as destroyers of both the eggs and the young lice. The block of trees sprayed in the Strain orchard, was only three years old, but contained both the eggs of green peach aphid and the hibernating larvae of the twig-borer in abundance. The small size of the trees made very thorough spraying possible. The work was done with a barrel pump, so it was not possible to make the applications with a high pressure. Thoroughness was depended upon to compensate for the deficiency in pressure. Tests were made in this orchard with Rex lime and sulphur, two strengths, namely: One gallon of the "Rex" to ten, and one to eleven gallons of water; Black Leaf tobacco extract, four strengths, namely, one gallon to thirty, one gallon to forty, one gallon to fifty and one gallon to seventy gallons of water; Black Leaf "40," three strengths, namely, one gallon to six hundred, one gallon to eight hundred and one gallon to one thousand gallons of water; soluble oil, one strength, namely, one gallon to twenty gallons of water. Thirty-eight trees in all were sprayed in this test, and five were left without treatment for checks.

On the 8th of March twenty-one trees were sprayed in Mr. M. Paxson's orchard at Clifton. These trees were five years of age, and fully as many eggs of the aphid and larvae of the twig-borer were found on them as in the Strain orchard. The following insecticides were used on this date: Nico-fume at two strengths, namely, one gallon of Nico-fume to six hundred and one gallon to eight hundred gallons of water. Kerosene emul-



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

## FIELD OF STRAWBERRIES OF A. R. CUMMINGS AT CANBY, OREGON

This is probably one of the finest strawberry fields on the Coast

sion was applied at one strength only, namely, a fifteen per cent oil emulsion prepared by using a common laundry soap. Black Leaf was applied at one strength, namely, one gallon to fifty-five gallons of water. Home prepared lime and sulphur was applied at one strength, namely, fifteen pounds of lime and fifteen pounds of sulphur to fifty gallons of water. This lime and sulphur was made in the ordinary way and was boiled for one hour, so that a first class lime and sulphur spray was prepared.

On March 28th the peach buds were just showing their pink tips, and several sprays were again applied. At this time three of the tests were made with a mixed spray of arsenate of lead and one of the tobacco preparations, the arsenate of lead being used for the twig-borer and the tobacco preparation with which it was mixed for the aphids. The following insecticides were applied at this time to about one hundred and fifty trees: Rex lime and sulphur, one gallon to ten gallons of water; Black Leaf, one gallon to fifty gallons of water; Black Leaf, one gallon to seventy gallons of water, combined with arsenate of lead three pounds to one hundred gallons of water; Black Leaf "40," one gallon to eight hundred gallons of water; Black Leaf "40," one gallon to one thousand gallons of water, combined with arsenate of lead six pounds to one hundred gallons of water; Black Leaf "40," one gallon to nine hundred gallons of

water, combined with arsenate of lead ten pounds to one hundred gallons of water.

The accompanying table gives the results of the first examination made on March 15, of trees sprayed in the Strain orchard. It may be seen from this table that all insecticides applied on March

Insecticide Used	Strength of Insecticide	No. of Aphids on 6 Twigs From 2 Trees
Black Leaf .....	1-30	2
Black Leaf .....	1-40	2
Black Leaf .....	1-50	1
Black Leaf .....	1-70	1
Black Leaf "40" .....	1-600	0
Black Leaf "40" .....	1-800	6
Black Leaf "40" .....	1-1000	7
Rex Lime and Sulphur...	1-10	1
Rex Lime and Sulphur...	1-11	2
Soluble Oil .....	1-20	0
Check .....		93

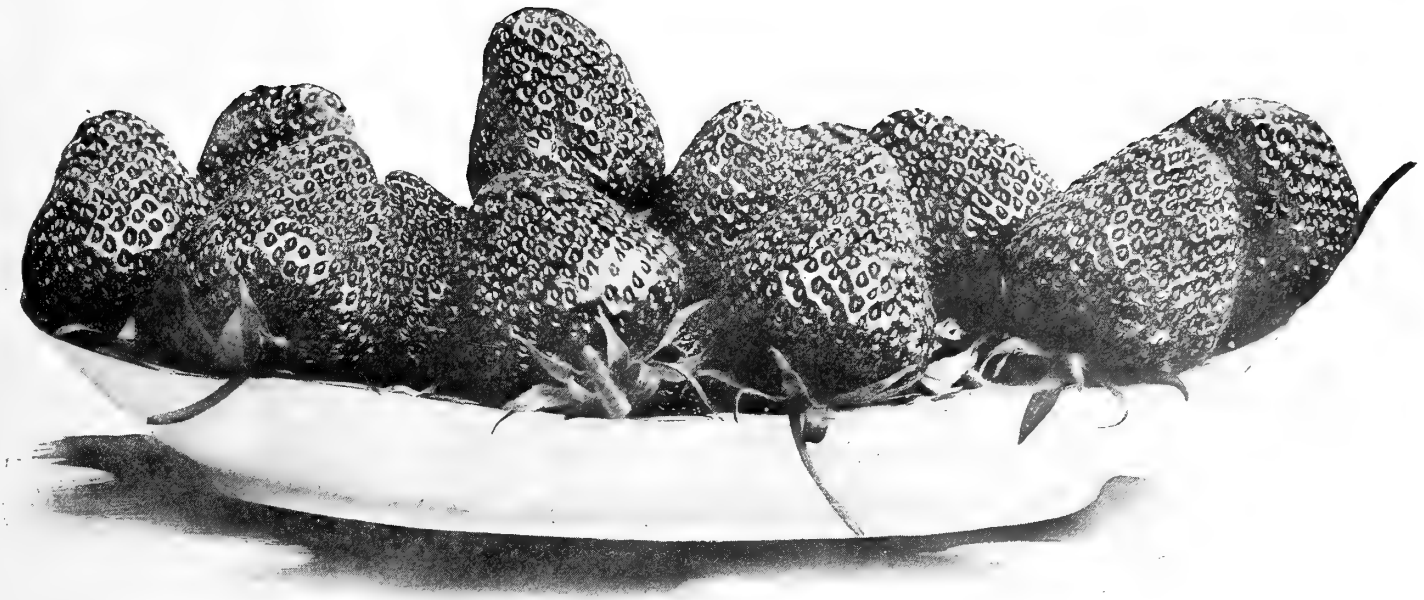
Trees sprayed March 7, examined March 15.

7th resulted in effective control, at all strengths. Three subsequent examinations were made on March 24th, April 26th and May 11th, each one indicating practically the same results. It would seem from this experiment that just as the eggs of this aphid are beginning to hatch is a favorable time to spray for its control. Lime and sulphur proved to be a perfect spray at this time. Apparently it gave a little better final results than anything else used. With the exception of Nico-fume, all the tobacco sprays of both early and late applications resulted in much good, but that lime and sulphur applied on the latest date of spraying did not prove beneficial. This application of lime and sulphur was

made at a time when some of the first lime and sulphur spraying was being done in the valley, but earlier than much of it. The experience of most of the orchardists was that the lime and sulphur did no good applied late for green peach aphid, which tallies with our experience. This season's experiments indicate that the most important thing in connection with the control of this aphid by the use of lime and sulphur is to get it on early; just as the eggs were beginning to hatch was found to be a splendid time. If spraying is delayed until the aphid becomes full grown some other spray besides the lime and sulphur should be used. This spray will not kill the mature stem-mothers unless applied in excessive quantities. The tobacco sprays are much better to use when mature lice can be found. But these preparations are also more effectual at the time when the eggs are hatching. A great amount of material is required in order to be thorough enough to kill most of the lice after they are fully grown.

The average orchardist would probably have a hard time to detect the little lice when they are first hatched, but the importance of spraying at this time should be sufficient reason for him to learn to find them. If this is not possible it would be reasonably safe to say that the lice may be found hatching after the first few days of warm spring weather in February or March, in the





Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
A DISH OF FANCY DUNLAP AND WARFIELD STRAWBERRIES

vicinity of Grand Junction, and that a spray at such time would be successful. A hand lens, costing twenty-five to fifty cents, is of great service in finding the lice.

On March 25th some large Triumph peach trees were sprayed on the C. H. Dilley place at Clifton. These trees had been sprayed a few days previously with lime and sulphur, but apparently with no success in killing the aphids, which at this time were clinging to the partially open blossoms waiting for a chance to get within. Part of these trees were treated with Black Leaf, one gallon to seventy gallons of water, and the rest with Black Leaf "40," one gallon to eight hundred gallons of water. By exceedingly careful and thorough spraying, entailing the use of at least ten gallons of spray to a tree, it was found that practically all the lice could be killed. The Elberta trees in this orchard did not have so many of the aphids on them, and the manager of the place decided that they did not need to be sprayed. On May 11th an examination of these trees showed the Elbertas to be badly infested, and the Triumphs, which we had sprayed, were exceedingly clean. The difficulty experienced in spraying trees so late in the season lies in the fact that the leaves always tend to curl and provide such protection for the lice that only the most thorough work can result in much good.

No matter when the spraying may be done for the control of this insect success cannot be attained unless a very thorough application of the insecticide is made. In fact this is a general rule that will hold good in spraying for the control of all insect pests. While this point is always emphasized by entomologists, our experience with orchardists has been that many do not have a proper conception of what thorough spraying means. This may be due in part to the failure to appreciate the fact that insects multiply tremendously in a short time,

and unless a spray kills practically all of a pest, such as the one in question, a few days or weeks may see them as plentiful as they were before the spray was applied. Spraying investigations in the orchard also indicate that much of the trouble is due to the expense of a proper treatment. Most of the insecticides used are very high priced, and the orchardist does not feel that he can go to the expense necessary to thoroughly treat his trees. He very often fails to realize that work such as this, half done, is really work wasted, to say nothing of the expense.

It is safe to say that spraying for the control of the green peach aphid can only be successful when very great care is used to thoroughly drench every portion of infested trees. The many experiments conducted has brought us to these conclusions: 1, lime and sulphur, both Rex and home prepared; Black Leaf extract, Black Leaf "40" and soluble oil may be effectively used for the control of the green peach aphid when applied in the early spring, just as the eggs are hatching; 2, a lime and sulphur spray is not effective when applied two weeks or more after the eggs are hatched, for at this time the stem-mothers are mature, or nearly so, and are able to resist the action of this insecticide; 3, good tobacco preparations may be used with success any time after the aphids hatch, but it is more difficult to succeed late in the spring because it is then more difficult to get the spray on all the lice on account of the protection of the leaves; 4, the best time to spray for this insect is in the early spring, when the eggs are hatching.

As an enemy of the peach, black peach aphid has never been of much economic importance in Colorado. It has been found from time to time in the peach growing sections of the western slope, but apparently has not been able to continue for any length of time in orchards

where it has been introduced. Notwithstanding the fact that up to the present time it has never made any headway in the orchards, it is well for the peach growers not to take any chances in orchards where it does appear, but to be prompt in making a very thorough application of Black Leaf, or some other good contact spray to infested trees. The fact that this pest has the habit of feeding upon the roots as well as the twigs of peach trees makes it one that is dreaded. Because of its ability to live below as well as above ground it might become a serious pest if conditions should happen, at any time, to be favorable to its development.

Very often peach nursery stock coming from an infested nursery is found to be badly infested with this aphid. When such trees are found they should either be carefully fumigated with hydrocyanic acid gas or sprayed with a good contact insecticide, such as Black Leaf, kerosene emulsion or whale-oil soap. Figure 5 shows a section of a peach twig on which is a large number of these aphids. This twig was cut from a tree which had just been removed from a box shipped into the state from an outside nursery. There were so many aphids in the box that they found their way through cracks and could actually be seen crawling on the outside in considerable numbers. The box bore a fumigation tag, and the inspector, whose duty it was to look over all shipments of nursery trees into the county, rightly condemned all the trees in the box. The dark color of the adult lice and their habit of feeding on the tender bark rather than the leaves enables us to separate this louse readily from the foregoing species.

♦ ♦ ♦  
*Editor Better Fruit:*

Although I take several other fruit journals and papers, I consider "Better Fruit" worth all the rest of them at the same subscription price. Joseph Weston, Belton, Mississippi.



# THE FRUIT INDUSTRY OF THE GREAT NORTHWEST

BY E. H. SHEPARD, EDITOR "BETTER FRUIT," AT FRUIT JOBBERS' CONVENTION, SACRAMENTO, CALIFORNIA

**A**FTER being engaged in wholesale business for some twenty years I spent a few weeks' vacation in Hood River Valley. This wonderful valley, with its beautiful scenery, its splendid climate and its intelligent people, charmed me beyond expression. The spell I was unable to resist, and consequently I became a fruit grower, and soon after manager and director in the Hood River Apple Growers' Union, which position I occupied for several years, finally retiring from the management, but continuing to be a director. I speak of the Hood River Apple Growers' Union because I believe it illustrates certain principles of value to the fruit dealer as well as the fruit grower. I believe the Hood River Apple Growers' Union is founded on true principles; the Union is co-operative, each stockholder must be a grower, the amount of stock a stockholder can hold is limited, all of which are essential for continued success. Perhaps the most important achievement of this Union from your point of view is its pack. We were first to put up a pack of apples where the apples in the middle were as good as they were on the top layer and the apples in the bottom as good as in the middle. We put up a pack that we could, and did, guarantee. Other districts have followed, and the standard of the fruit industry of the Northwest has raised until now nearly every district commands the confidence of the dealer.

I believe it is of interest to every one of you gentlemen present to encourage every fruit growers' association with your support. The association can, and does, do for you what you cannot reasonably expect independents, as individuals, to perform. The association has a thorough system of inspection, and I believe, gentlemen, you want, and we want, inspection at our end of the line just as much as you need it, and we want it at your end of the line. The association can put up a pack that is not only uniform, but a pack that they can guarantee. I honestly believe that you will get fruit in far more satisfactory condition from the association than you will from individuals, for the reason that it will be properly packed, thoroughly inspected and guaranteed. I will not dwell upon what you may get from the individual shipper because you have had sufficient experience in the past in a general way to know what you may expect. Permit me to admit that there are individual exceptions, of course.

It is my pleasure to say today that I believe the grower and dealer are nearer together than they ever have been before in the history of the fruit industry, and I believe the closer they get together in the future the more profit there will be in the business for both. There is no question but what much of the dissatisfaction that has existed between the dealer and the grower can be eliminated. I believe the dissatisfaction has been partially your fault and partially ours.

The grower did not know how to pack his fruit, he did not know how to grade it and he did not know the proper ripeness for picking. When low returns come in with bad order reports the grower censures you, which leads me to offer a suggestion. I believe every fruit dealer should give more attention to the inspection of a car on arrival. We fruit growers often get reports like this: "Car arrived off condition," "Too Ripe" or

would be advisable if such report could be in the form of a sworn statement. Now, I do not want you to infer that I am telling you how to run your business, but I believe if you know the fruit grower at the other end as I do it would enable you to devise a ways and means that would meet the situation, protect you in your business and protect your reputation. I also believe such a method will be far more effective in convincing the grower than the ordinary short personal "Off Condition" report made over your own signature.

I believe the fruit grower needs and must have the jobber, the dealer and the commission man. I do not wish to suggest any system that will hamper you in your business, but on the other hand, it is my aim to assist you if possible, and if I am successful I feel I am assisting the fruit grower. I realize the magnitude of the fruit business and I understand that this business must be divided. The fruit industry is similar in many ways to other industrial enterprises. A factory, for instance, is divided into a manufacturing and a selling force. The fruit industry itself must be divided. Growing fruit is one business and selling fruit is another business. The selling end must necessarily be again divided—the association selling the dealer or jobber, the jobber selling the retailer and the retailer selling the consumer. I do not believe that the fruit grower will find it practical to eliminate any one of these important and necessary factors in distributing his fruit. I imagine that in years to come fruit will be handled through the same channels in much the same way as it is today. However, I firmly believe that conditions will be improved, and I might add there is room for improvement. I have given the matter considerable attention and am satisfied that, generally speaking, the jobber or commission man is not making an unreasonable profit. I am convinced, however, that the retailer is. I know of many instances where the retailer's profit is not only exorbitant, but outrageous. I know of Hood River apples which cost the retailer three dollars per box, or thirty cents per dozen, being sold for one dollar and fifty cents per dozen. I know of apples that cost the retailer two dollars to two dollars and a half per box being sold at seventy-five cents, one dollar and one dollar and twenty-five cents per dozen. Now, some may say in answer to this that the expense of doing a retail business is high. I am willing to admit this may be, and frequently is, true. However, I am told that the retail profit in the grocery business is about seventeen per cent to eighteen per cent in modern stores, in the best localities, but the same groceryman wants a profit of from two hundred to four hundred per cent on his apples. Too much profit is made in retailing fruit. To illustrate, I will give you a specific case. In Washington, D. C., an Italian fruit seller who occupies a small store in which he carries



PEONIES

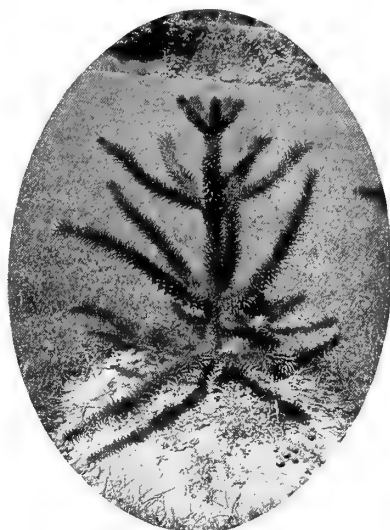
"Frozen." It seems to be human nature for the average grower when he gets such a report to conclude that you are untruthful, and he sincerely believes he has been skinned. In my travels I have seen cars arrive on the market, many of which were unsalable due to the grower's fault in some manner. Permit me to offer for your consideration, if you please, a suggestion. When a car arrives off condition or not up to the standard you should have some system of public inspection that would be complete and thorough in every detail; you should have an inspection report rendered by some broker or public fruit inspector who is not interested in or connected with your business, and I believe it

about fifty dollars in stock at one time, after paying all running and living expenses, sent \$3,000 to Italy in one year. I believe these exorbitant retail prices are preventing the consumption of fruit and are limiting the amount of business that you gentlemen are doing. The greater the consumption of fruit the greater will be your business, and the larger the business you do the more profit you will make. It is consumption that the fruit grower wants; it is consumption that your business wants. We both have the same object in view; therefore we can assist each other. Our profit is not too large; I grant that your profit is not too large, but I do claim that the profit of the retailer is exorbitant, and I believe that you, being in closer touch with the retailer than we are, should give this important matter serious consideration and if possible devise a way and means to control and regulate retail prices on fruit. We know that the retail prices are not only controlled, but regulated in many lines of business. I will cite you a specific case in the fruit business. The Puyallup Berry Growers' Association, which handles the raspberry crop of that valley, in past years sold their berries to the dealer, who sold them to the retailer, who retailed them at twenty cents per quart, and sometimes more. The berries netted the association one dollar and ten cents per crate. As raspberries are very perishable the markets which could be reached were somewhat limited and the territory that could be supplied in past years was not large enough to consume the entire raspberry crop of this valley at these figures, and, therefore, a large per cent of the crop had to go to the cannery. Last year the manager put into effect a new policy; he made a trip East and contracted with the dealer at a certain figure so that the dealer would have his legitimate profit, and he made contracts with the retailer so that the retailer could get these raspberries laid down at two dollars per crate, guaranteed, provided he would retail them at ten cents per quart. This arrangement was so successful that the territory consumed the entire crop of berries on an increased acreage, and it being only necessary to send such berries to the cannery as were too ripe for shipment. The surprising part of it all is that when the berries were retailed at ten cents per quart instead of twenty cents the berry grower netted one dollar and thirty cents instead of one dollar and ten cents per crate. I think this object lesson worthy of consideration as a plea for reasonable retail prices.

The Citrus Fruit Growers' Exchange in California offers us another example which is worthy of a moment's attention. I understand that the Exchange so conducts its business that ordinarily a box containing one hundred and fifty oranges is sold to the retailer, delivered, at two dollars and forty cents, which enables him to retail them at thirty cents per dozen, making a good profit. Thirty cents per dozen means two for a nickel, or four for ten cents. I believe such

prices as these on medium sized apples of good quality will be important factors in increasing the consumption. We must create a greater distribution and establish reasonable retail prices if we want to market the increased crop of fruit to advantage in future years. I will cite another instance to illustrate both of these features. A few days ago a Hood River man received a letter from a friend who lives in Memphis, Tennessee, who stated that at last a car of Hood River apples had reached Memphis, and added that they were being sold at one dollar and twenty-five cents per dozen. These apples could have been sold at thirty cents per dozen retail, which would have paid the freight, given the retailer and the jobber a legitimate profit and still leave good money for the fruit grower.

Another point that I believe is worthy



CHILI PINE

of your consideration toward securing an increased consumption is selling retail by the box instead of by the dozen. A consumer who buys a box of apples will use more apples and use them faster than the consumer who buys a dozen. I was told by some of our people who have just returned from New York City that in all the large stores where fruit is being handled that not a single box is placed on sale in a retail way. Not long ago a friend of mine who lives in Portland called at one of the big grocery stores in New York and wanted to buy a box of apples, and he was told that they did not retail them by the box, but that they sold them by the dozen only. Gentlemen, if you want to do more business you must endeavor to increase consumption, and I think by creating a sale for apples by the box will assist in doing it. Exactly the opposite of selling apples by the box is also true. Some package should be perfected not only for apples and oranges, but for other fruits, that would contain a small quantity already done up ready for the purchaser. I believe we need, and should have, a package that would hold a dozen apples, a dozen oranges or a dozen of some other fruit, and such packages should be made of such size and shape so that six,

eight or ten of them might be put in an ordinary sized case.

Mr. A. C. Rulofson, Monadnock Building, San Francisco, California, is the inventor of a small package which bids fair to be an important factor for increasing the retail sale of apples. The paper bag is a very inconvenient package in which to carry home a dozen apples, particularly if you get into a crowded street car and hang on to the strap. You know the bag will burst and, therefore, you won't buy the dozen apples. The package made by Mr. Rulofson is composed of corrugated paper, holds a dozen apples and is supplied with a small, neat wooden handle similar to the ones used on shawl straps. It is a very convenient package and one which the retail fruit dealer can have ready for immediate delivery—one that will not go to pieces, and one that the customer can conveniently carry in the crowded car or anywhere else.

There are many other features connected with the fruit industry which are important that will be so ably covered in an excellent address by the manager of the Hood River Apple Growers' Union, who follows me on the program, that it will be unnecessary for me to discuss them. However, I want to emphasize the necessity for closer relationship, more sincerity, between the grower and the dealer. Pardon me for being frank in saying that this spirit is lacking. Your representatives come to us fruit growers, and after exchanging a few courtesies, get down to what they call "brass tacks" and begin to tell us of the enormous crops we are going to have this season in all the different sections of the United States. On the other hand, the grower is just as bad and hollers "light crops." One is "bearing" the market and the other is "bulling" it. Gentlemen, this is all wrong. I do not believe it is always your policy, but it is frequently the policy of your representatives. If two men want to do business sincerity is the best policy. If two men are frank with each other they will do business more satisfactorily, quicker and at less expense. Therefore, let us both be liberal in our system and in our dealings, and we will get better results and be happier.

The Northwest is already a great fruit country, and is rapidly growing. It will be the greatest apple producing country in the world. We have the climate and the soil to produce perfect apples, apples beautiful in color, unsurpassed for their excellency in flavor, keep and size. The fruit growers are an intelligent people, people of ability, people who will get results. Permit me to quote a short paragraph from *The Spectator*:

"The Spectator has lingered on the commercial side of this apple raising country, as it is at that side which has attracted capitalists, professional men and college graduates to try their hand in fruit culture and country living, but aside from the perfect apples which have given the valley its fame, there are scenic attractions which would cause one to linger here, but he who lingers is lost,



MAGNOLIA SOULANGEANA

and straightway buys an orchard and devotes himself to the raising of apples. He cannot help it; the very air is charged with apples; the theme of all conversation is apples; the apple orchard is ever before one's vision, and it is a strong man who can resist the call."

It is our climate, our soil, our spirit of enthusiasm, as indicated above, which is making the Northwest the greatest apple producing section in the world. Our enthusiasm, aggressiveness, energy and ability cannot help but spell success.

My position in the fruit world is somewhat unique. While I am a grower and am a director of the Apple Growers' Union at Hood River I am also the editor and publisher of "Better Fruit." It has been my aim, my ambition, if you please, to make "Better Fruit" not only the best, but the most influential fruit growers' paper in the world. I do not believe this can be accomplished unless it is absolutely fair and square with everybody connected with the fruit business. It is my desire to bring the fruit dealer and the fruit grower closer together. To do this the good will and esteem of both the dealer and the grower must be secured. This cannot be done without being fair with both. If "Better Fruit" can help you in your business it will help the grower. On the other hand,

if it helps the grower it will help you in your business. "Better Fruit" is helping the grower to grow better fruit, to grade it better and to pack it better.

We fruit growers are in a state of evolution. We are developing, and I believe frankly more improvement has been made in the growing of fruit in the last few years than in marketing and selling fruit.

Just a few words about over-production in general and over-production of apples in particular. We have all heard this over-production talk for years. I have heard it ever since I was a boy, and yet it is a well recognized fact that there has never been a continued over-production of any food commodity. When vast areas were planted to wheat in the Northwest the cry went up, "Over-Production," but today the price of wheat is higher than it has been for years, and authorities who have given the matter careful study state that in a few years the United States will not grow enough wheat to feed its own people. I will not worry you with statistics about the apple crop. You all know them. Suffice it to say, however, that from 69,000,000 barrels of apples in 1896 we have fallen to an average of 25,000,000 barrels during the last three years. It seems strange to fear over-production with a decreasing crop on an increased acreage. You must bear in mind further, for it is a matter of fact, that only ten per cent to twenty per cent of the orchards that are set ever make commercial orchards. The population of the United States in the last ten years has increased to over 90,000,000. The apple crop has decreased in a greater ratio. But the consumption of fruit, I mean all kinds of fruit, during the last thirty years in the United States has increased five times as rapidly as the population. However, we may have a temporary condition of under-consumption, arising from a lack of proper distribution and prohibitory prices. The success of the whole fruit industry seems to depend on a proper distribution and

intelligent marketing. Again, gentlemen, this is your end of the business. Consumption can be created by proper distribution if the prices are right. To illustrate what can be done in the way of increased distribution I want to tell you that the Hood River Apple Growers' Union, which depended almost entirely upon New York to take its output in previous years, this year has sold to twenty-four states, sixty-five cities and eighty-seven different buyers.

Just a word about the so-called immense boxed apple crop of the Pacific Coast. It is estimated, perhaps an exaggeration, that the crops in Colorado to the Pacific was 15,000 cars of apples during 1910. At 600 boxes to a car and 100 apples to the box this would mean 900,000,000 apples. If this crop was so distributed and the price right, so that every inhabitant of the United States could eat one apple a day for ten days, they would eat up this so-called "immense" apple crop of the Northwest in just ten days. The California orange growers howled "over-production" when they shipped 1,400 carloads of oranges in one year, but that crop has increased, and they are now selling over 40,000 cars per year, and I am told the orange growers today are making better money than in previous years. Apparently the Citrus Exchange has been successful in properly distributing their fruit, regulating prices in a way to increase consumption sufficiently to care for their increased output.

I believe the jobbers should unite in demanding quality of fruit and proper



PYRAMIDAL ARBORVITAE



REEDS

grading, even to the point of refusing to accept any carload that is not up to the standard of grading. It is good fruit, attractive fruit, that increases consumption. Ordinary fruit, rotten fruit, interferes with consumption. The dealer and the grower both know this, and the grower should be compelled to govern himself accordingly if he doesn't see fit to do so otherwise. Therefore, it seems proper that both the grower and the dealer should adopt as a motto, "Quality

first, quality last and quality all the time."

California is a wonderful fruit state, famous for its many varieties of fruits— oranges, lemons, olives, grapes, peaches, figs and others too numerous to mention. While I have not seen the statistics for this year, I presume the crop must be almost \$100,000,000. The varieties of fruits grown commercially in the Northwest are not so many as in California. Our principal varieties in a commercial way are apples, pears, prunes, peaches

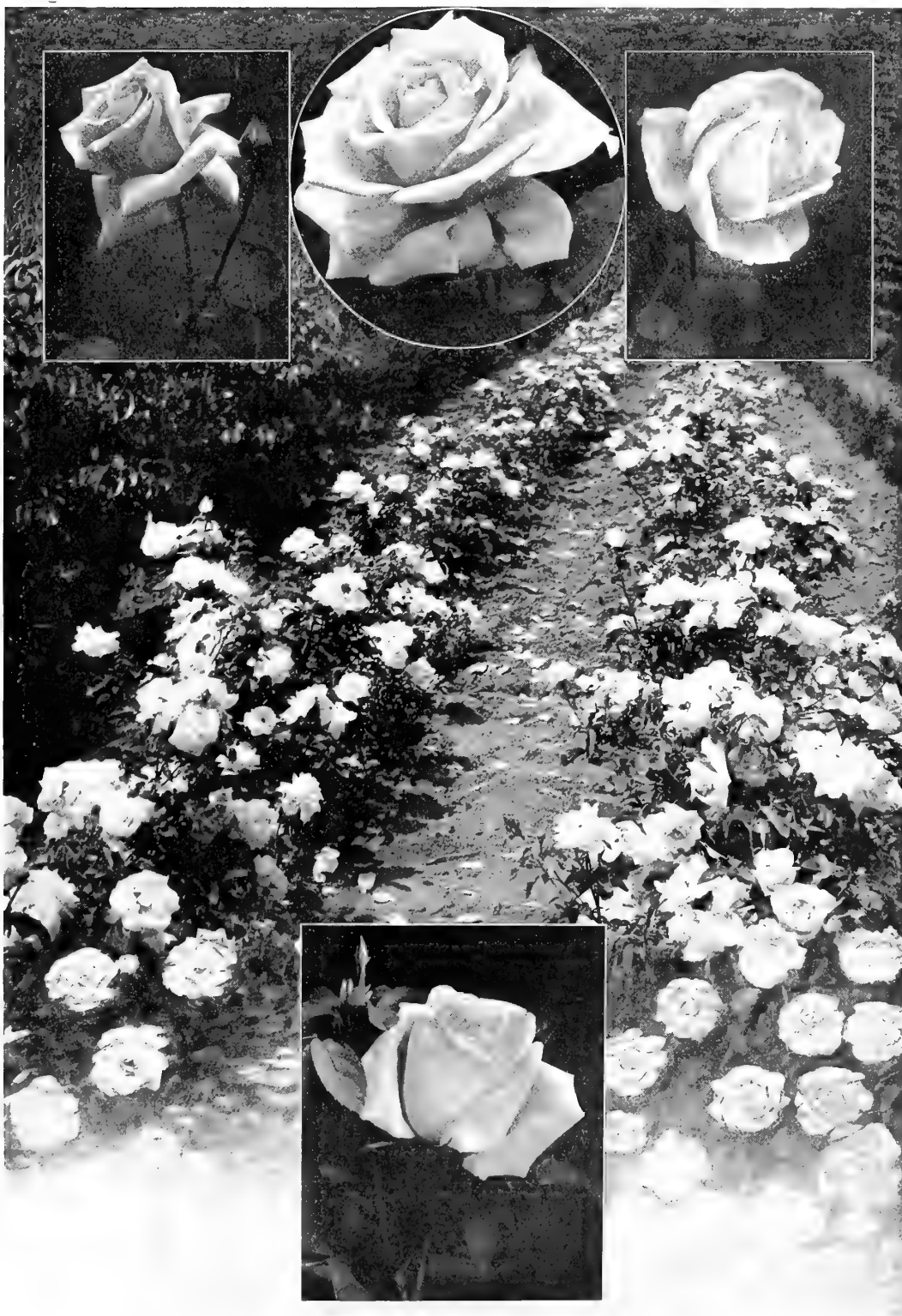
and cherries. While no figures have yet been given out, probably the fruit crop of Oregon, Washington and Idaho will be somewhere in the neighborhood of \$20,000,000 for the past year, the fruit industry of the Northwest being the fourth industry of our country. These facts cannot help but convince us of the magnitude and the future importance of the fruit industry for the Northwest.

The fruit business is about the only line of business of importance that I

know of that is done on a consignment basis, and frankly and honestly, gentlemen, the quicker we get on a buying and selling basis the better it will be for everybody. The fruit business can be conducted on these principles the same as any other business. Purchases can be made at an agreed price for certain kinds of fruits, packed according to certain grades, a thorough inspection made at the shipping end and the grade guaranteed, so that the buyer will know just what he is getting and just what it will cost him laid down, this to be subject to final inspection by authorized inspectors, when necessary, at your end of the line, which will protect you and compel us to live up to our agreements. This will do away with much of the dissatisfaction that has arisen in the past through consignments, and every grower will know just what he is selling the fruit for and every dealer will know just what the fruit is going to cost him. This certainly seems preferable to the uncertain, indefinite results that come from the consignment business.

I have talked with a great many fruit dealers on these subjects during the last few years and in nearly every instance I find that high class dealers are in favor of buying from associations, and many have expressed themselves in favor of f.o.b. purchases in place of consignment.

Gentlemen, we are engaged in a great big business, which is rapidly increasing, and with many difficult problems to be solved in the future. Your interests and our interests are mutual. It must be our aim to give you better fruit, better grading, better packing, and guarantee it. This will enable you to sell for better prices, which means more money for you and more money for us. We are all after the "almighty dollar." Therefore, let us work hand in hand. Our success will be greater united than divided.



BEAUTIFUL PORTLAND ROSES

Bessie Brown

Frau Karl Druschki  
Frau Karl Druschki Blooming in Nursery Rows  
Richmond

Madam Caroline Testout



# CHERRY HEAVEN—WERE FIRST GROWN YEARS AGO

BY PROFESSOR H. E. VAN DEMAN, WASHINGTON, D. C.

**J**UST when and where the culture of the cherry was begun we will never know, but it was in the long-ago, probably before the days of Grecian and Roman civilization, and from what can be gathered from history Southern Europe was the place of its nativity. That cherries have been a popular fruit there is no doubt, and when the home-seekers from beyond the seas landed on the American continent they were not long in planting seeds of this choice fruit in their new homes. This was done by the pioneers on the shores of both oceans, and success rewarded their efforts in nearly all sections except along the Gulf of Mexico, where the climate was found to be too warm. The cherry tree, no matter what the species or variety, loves a moderately cool and equable climate. Sudden changes from mild to frigid temperatures, or the reverse, are a very serious hindrance to successful cherry culture, and with many varieties are fatal, although a steadily cool or warm climate may be very favorable to them.

There are many species of the genus *Cerasus*, to which all the cherries belong, both wild and cultivated, native and foreign. We have in America several species that attain gigantic size and are classed among the large forest trees, their lumber being of great value for making furniture because of its fine grain, hardness, durability and rich, reddish color. At one time it rivaled mahogany in popularity, and would be so now if the supply was not almost exhausted. But from none of our native species has there been developed as yet any variety that is of real value as an edible fruit-bearing tree, although some of them are barely eatable; nor have any of them, so far, proved to be very serviceable as stocks upon which to bud or graft the cultivated kinds because of their mutual uncongeniality.

In Japan the great spring festival is that of the time of cherry blooming, and next to the chrysanthemum the cherry tree is the most popular of all their floral triumphs. We in America have been slow to import the many varieties of Japanese ornamental cherries and add them to our garden decorations, but it is being done now to some small extent. Strange as it may seem, those enterprising people know almost nothing of the cherry as a fruit, for none of the trees they grow bear fruit of any value for eating. Many of them have double flowers and bear no fruit at all.

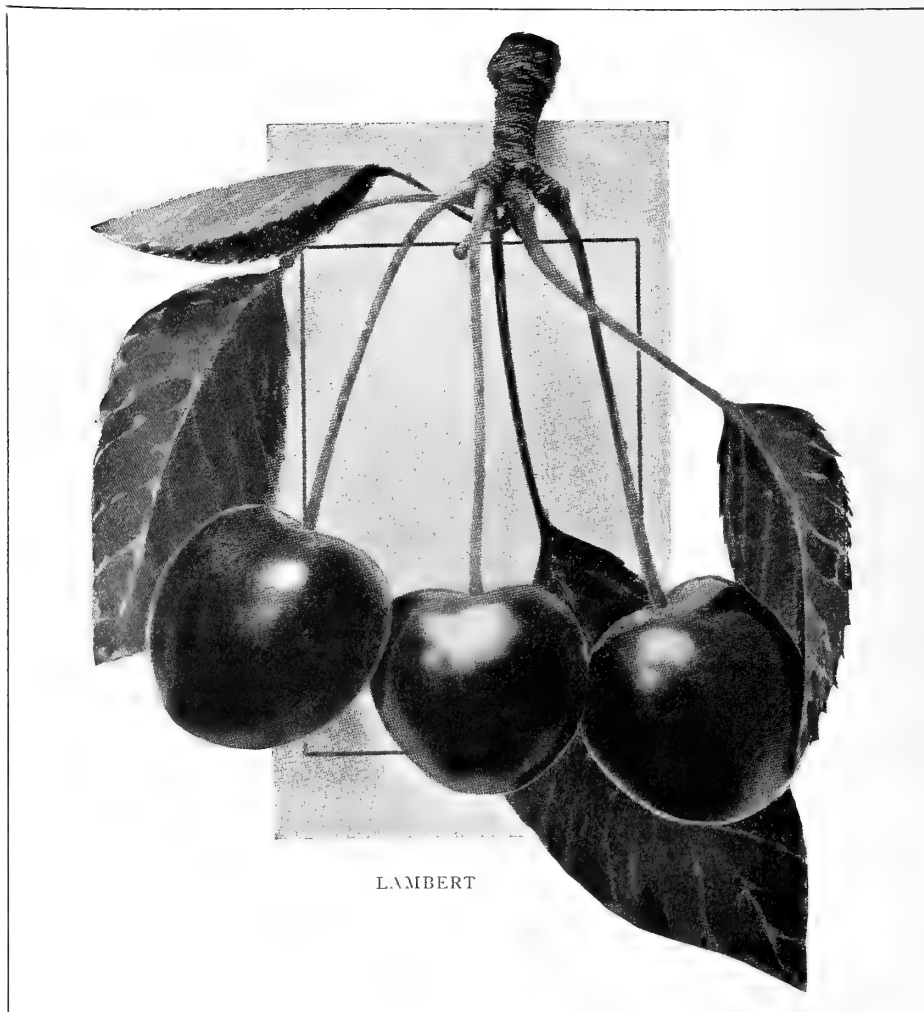
The European cherries, on the contrary, are the great fruit bearers of all the world. They are divided into at least two botanical species, and of these there is an untold number of varieties, but so far as I know there are no crosses or hybrids between these two species. It would seem that there is great opportunity for the production of new varieties of value by the artificial cross-pollination of some of the best of the old ones, and possibly by introducing the charac-

teristics of some of our native species, provided they are not too diverse to be cross-pollinated.

With the development of American horticulture the cherry was carried to the remotest corners of the country and tested in the most practical way by those who did the pioneering. In the rich soil of Pennsylvania, Maryland and Virginia the different classes all flourished and bore abundantly. The Mazzards, which was propagated mostly from seeds, had many varieties that made tall, pyramidal trees more than fifty feet high, and with trunks three feet and more in diameter. Such trees sometimes bore fifty bushels or more of cherries, but they were usually small and unsalable, and anyone who wanted them could have them for the picking. There are such trees yet standing in the hilly sections of the Appalachian range that are healthy and vigorous, although very old.

The mission fathers from Spain planted cherry seeds in California long ago, and the trees were found to succeed there very well. But the most notable and by far the most successful of all the experiments made in new territory was by the Lewellings, who crossed the plains and mountains from Iowa to the Pacific Northwest. They went to the great Oregon country more than fifty years

ago, carrying fruit trees of several kinds by ox team, and finally located on the eastern bank of the Willamot (this is the original and correct spelling, and was used by Washington Irving and other authorities) River, where is now the present town of Milwaukie. There the cherry trees flourished and bore abundantly. Seeds from them were planted and new varieties originated that were better than the old standards from which they came. The Mazzard type was the one that gave the greatest results, and such varieties as Napoleon and Tartarian were used as parent stocks. There are today no better varieties grown than those originated at the old Lewelling homestead, the Bing being perhaps the most notable of all. It was named in honor of a faithful Chinese workman on the place, and this name is now known on every continent and will go down to the centuries to come as belonging to one of the best cherries that has ever blessed the world. And it is not the only good one that came from the Lewelling experiments. I have been there to see the old trees that are left and the birthplace of the cherry industry of the Northwest. The humble efforts of these good men bore fruit far beyond their expectations. As cherry culture grew apace it spread over the entire



LAMBERT





Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
PRIDES OF MICHIGAN, GROWN BY JACOB FRESE, MICHIGAN

Willamot Valley, into the Umpqua and Rogue River countries and up the Columbia to The Dalles; to Walla Walla, to the Puget Sound region and finally all over the irrigated sections of Oregon, Washington and Idaho. California, likewise, proved to be well suited to cherry culture. Verily, the Pacific Coast is a Cherry Heaven.

To the Eastern visitor, although he may be a cherry grower of long experience, it is a revelation to see the cherries that grow from California to British Columbia and eastward as far as the foothills of the Rocky Mountains. The trees seem to be perfectly at home and they bear almost without a single failure, and usually so heavily as to surpass belief. Last year there were hundreds of branches cut from the heavily laden trees and brought to the Alaska-Yukon-Pacific Exposition at Seattle, Washington, from many sections of the Northwest to show how the fruit really hung upon them. At the Yakima County exhibit one day some Eastern ladies were looking at several of these branches, and I overheard one say to another, "See how nicely those cherries are tied on the branches." Although it was none of my business (for my duty was to judge the fruits, which I was just then doing) I said to her, "You can untie and eat some of them if you like," and she at once began to look for the strings, and not finding them, said, "I don't see where they are tied." To which I replied, "No, because the Good Lord tied them on," and then they wondered more and more, but went away believing that cherry trees could not really hold such big loads of fruit. And it is really wonderful how they bring to maturity such tremendous crops of large and luscious cherries, and rarely with a blemish. There is not a wormy cherry in all that region, for there are none of the insects

there that cause this trouble in the Eastern States. Likewise it is seldom that cherry rot occurs, except during rainy spells that cause the ripe or ripening fruit to crack, and then the air causes decay. Rains seldom occur at that season of the year, and only in some sections. The dry air and almost entire absence of rain during summer time east of the Cascade range is better for the cherry crop than the climate west of it, although some of the best cherries I have ever seen were grown on the shores of Puget Sound.

It has never been my privilege to attend one of the "cherry fairs" of the Pacific Coast, but I have seen extensive displays of the fruit at expositions, both East and West, for many years past, and I have been in the orchards at all seasons of the year, and know from sight and taste the truth about the region I call Cherry Heaven. There is nothing equal to it in the Eastern and Central States, and there never can be because of the peculiarly favorable climate and soil combined. Whether it is volcanic ash, disintegrated basalt or glacial drift, these soils all suit the needs of the cherry trees. They grow and spread their branches wide and high; the glossy fruit hangs among the dark green leaves along the branches in such profusion that it is no wonder those who had never seen the like before thought the cherries were tied on by artful man.

The size of most varieties, whether sweet or sour, is usually much larger than the same of Eastern growth. There is nothing strange in seeing boxes of cherries prepared for market that exceed an inch in diameter and I have seen several ten-pound boxes that averaged an inch and an eighth. For many years past I have occasionally measured specimens that were more than an inch and a quarter in diameter, grown in California,

Oregon and Washington. No doubt Idaho and British Columbia can do as well. And the quality of the Western cherries is as good as their looks. The sweet varieties are really sweet and the sour ones are sour, although the flavor of most kinds is mild, subacid and very pleasant. The large subacid or sweet varieties with firm flesh are grown extensively and almost exclusively, for the sour varieties are not only smaller, but too soft for Eastern shipment, and therefore only grown for home use and in small quantities.

The Eastern market for cherries is always good, especially for the higher classes, such as will sell at good prices at the fancy fruit stands. And there is little danger of Eastern competition, because there is no other section where the same grades can be grown. The nearest approach to it is in Northern Michigan, where cherry trees under good culture yield splendid fruit and usually in abundance. I have often been in an orchard of over two thousand trees near Frankfort, where the trees and fruit both reminded me of those of the Pacific Coast. The climate and soil are well suited to the cherry and the owner understands the culture and packing of the fruit about as well as the Western growers. The prices obtained have usually been satisfactory, but hot and very damp weather has sometimes caused severe losses from rot. The Western cherries are firmer in flesh and will stand shipment across the continent with little loss from this cause.

The most popular varieties grown on the Pacific Coast are Bing, Lambert and Napoleon, the latter being usually called Royal Ann over all that region. There are almost none of the old varieties grown extensively except Napoleon, but it is now perhaps the most popular of all because of its bright rosy color, large size, pleasant flavor and ability to bear long shipment well. The Bing and Lambert are both dark, purplish red, and attain even larger size and stand shipment equally well. They are gaining a strong foothold and will probably soon exceed Napoleon in general favor; the Oregon, Hoskins and other new seedlings of Western origin are being tested and in time to come still newer varieties may surpass all that have gone before. What may we not expect of the future of Cherry Heaven?



**GOOD APPLE PROSPECTS.**—Reports from different sections of Western New York agree that conditions for a good apple crop are promising. The weather has been cool nearly all the time and there has been no rapid budding of the trees, as was the case in March, 1910, when a period of warm weather was followed by a sleet and snow storm in April, blighting the blossoms. Peaches this year have not entirely escaped, but it is the opinion of a large number of growers that a large part of the crop will ripen. Fruit trees of every variety are now about in normal condition. Prospects for berries are good, as they have wintered well. Reports today from the Southern Ulster fruit belt, one of the biggest fruit sections in Eastern New York, were to the effect that the outlook is encouraging. A prominent fruit cultivator said: "There has been enough evenly balanced cold weather to liven the fruit trees up well and yet hold back buds, and now that warm weather is about to come it is evident there will be a large fruit yield. The peach crop in this section will be especially good."

# ORCHARD SPRAYS AND SPRAYING SUCCESSFULLY

BY A. B. CORDLEY AND H. S. JACKSON

**K**NOWLEDGE of a multiplicity of sprays is not essential to success in spraying. Equipped with an understanding of the range of usefulness of three or four standard sprays, with a determination to do thorough work, one is as well fortified as may be against orchard pests and diseases.

While it is true that most growers of experience understand the general theory of spraying it is considered desirable for the benefit of the novice to emphasize certain fundamental principles, a knowledge of which is essential to the proper selection and use of remedies for orchard diseases or insect pests.

It should first be thoroughly understood that spraying is not a cure all. There are many diseases and some insect troubles of the orchard for which spraying is of no value, either as a preventive or cure.

Fortunately most of the important orchard pests and diseases may be held under control by proper spraying. It is important to note, however, that in order to do effective spraying against any pest it is essential that the proper spray be used at the proper time for that particular pest. A spray which is effective against one pest may be totally ineffec-

tive against another, even if applied at the proper time. The proper spray for any pest applied at the wrong time is as useless as no spraying at all.

It is, therefore, of prime importance that every grower should know what diseases and insects are prevalent in his district, that he be able to recognize them when he sees them and practice the proper methods of control.

The proper time at which a spray should be applied and the proper spray to be used is determined by the life history of the organism causing the trouble, whether it be an insect or a fungus, or bacterial disease.

It is not the purpose at this time to discuss the life history of orchard pests, but rather to give general directions for the preparation and use of the common sprays.

Under the head of insecticides are included those sprays used primarily to combat insects. To understand the general principle which underlies the selection of the proper remedy to be used for any particular insect one has only to know that nearly all insects may be divided for practical purposes into two great groups, viz.: Chewing and sucking insects.

**Food Poisons**—For combating chewing insects, that is, those which actually chew and swallow the tissues of the plant on which they feed, a poison must be used. The surface of the parts of the plant on which such an insect feeds must be coated or sprayed with some poisonous substance which will not injure the plant yet will kill the insects which feed upon the parts thus coated.

(a) Arsenate of lead is now the chief poison used in spraying for the codling moth. Many commercial brands are to be had, and so far as our observations go all are reasonably pure. The various brands may, however, be arranged into two more or less definite groups, which may be termed the acid arsenates and the neutral or normal, or Ortho arsenates. While the evidence is not conclusive it appears to be true that the acid arsenates cannot so well be used with the lime-sulphur solutions as can the neutral arsenates.

Most manufacturers advise the use of three pounds of arsenate of lead to fifty gallons of water. The Washington Experiment Station has demonstrated that in the dry climate of Eastern Oregon one pound to fifty gallons gives equally good results in controlling codling moth. We have found that two pounds are sufficient in the Willamette Valley.

If it is desired to use a combined insecticide and fungicide arsenate of lead may be added to bordeaux or lime-sulphur solution in the same proportion as when water is used.

**Contact Insecticides**—For combating sucking insects, that is, those with sucking mouth parts which pierce the plant upon which they feed and suck juices, a spray must be used which will kill such insects by acting externally on their bodies, since they secure their food from beneath the surface and cannot be made to eat the poisons. A spray of this sort is known as a contact insecticide.

(b) Kerosene Emulsion—Kerosene oil, or coal oil, is a powerful insecticide. The undiluted oil is, however, liable to seriously injure plants to which it is applied. This difficulty is overcome by forming an emulsion with some substance that it may be readily diluted with water. Soap is most commonly added for this purpose as follows: Kerosene oil, two gallons; hard soap (preferably whale oil), half pound; water one gallon. Dissolve the soap in the water by boiling. Add the suds, boiling hot, to the oil. Churn the mixture violently with a spray pump until it becomes a thick, creamy mass. If perfectly emulsified the oil will not rise to the surface even after standing an indefinite time. Such an emulsion may be used immediately or kept as a stock solution. Before using dilute one part of the stock emulsion with eight or ten parts of water. This will be found to be an efficient remedy for green aphids, woolly aphids, red spider, mealy bugs and certain scale insects.



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
KELLOGG THOROUGHbred BERRIES, AS GROWN BY EARL WING, MICHIGAN



*Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan*

A DISH OF HELEN DAVIS. THE LATEST ORIGINATION IN THE STRAWBERRY WORLD

(c) Black-Leaf is used especially for plant lice, but may also be used for various other sucking insects, as the leaf-hoppers and the apple tingis. Use in the proportion of one part to sixty parts of water or lime-sulphur.

(d) Black-Leaf 40 is an extremely concentrated form of nicotine sulphate, and is now sent out as a substitute for the black-leaf. It is supposed to be as efficient and has the added benefit of being cheaper. Use in the proportion of one part to eight hundred parts of water or lime-sulphur.

The term fungicide is applied to those substances which will prevent the growth of fungi on plants. The fungi are a group of plants of low order, many of which live as parasites on the higher or flowering plants.

A parasitic fungus is a plant as truly as is the apple tree, the prune tree or any other plant upon which it may be growing. It differs from the common plants essentially in being much more simple in structure and in being devoid of chlorophyll—the green coloring matter of plants. Its reproductive bodies,

which are called spores, are more simple and very much smaller than the smallest seeds of our common plants, and are produced in almost inconceivably great numbers. The vegetative portion of the fungus, the part which, in a sense, corresponds to the roots, stems and leaves of ordinary plants, the parts which absorb the food materials and eventually produce the spores, consist of a mass of more or less branched, white or colorless, and very minute threads, and is called the mycelium.

Being so small and light the spores are readily carried long distances by the wind, washed about by the rains, and are also carried by birds and insects, and probably by other agencies. These agencies are thus largely responsible for the spread of fungous diseases from leaf to leaf, plant to plant, orchard to orchard. Over greater distances the spores may be carried on shipments of infected nursery stock, fresh fruits, vegetables, seeds, etc.

Should a spore fall upon suitable soil, such as the surface of leaf or fruit, and the conditions of heat and moisture be

favorable, it will germinate—push out a delicate, slender germ-tube. In the case of most parasitic fungi this germ-tube soon penetrates the epidermis of the leaf or fruit and the mycelium develops in the underlying tissues entirely beyond the reach of fungicides.

The philosophy of spraying for fungous diseases in general is based on the fact that they cannot be cured, but can be prevented. This germ-tube must be destroyed before it penetrates the epidermis, and to do this the surface of the host must be thoroughly protected by the fungicide during the entire time the spores are germinating.

(a) Bordeaux Mixture—Bordeaux mixture has long been the principal spray used as a preventive of fungous diseases of plants, and while other sprays, notably the lime-sulphur mixtures, give promise of largely supplanting it for orchard purposes it still remains one of the most important orchard fungicides. Bordeaux for winter use may be made as follows: Copper sulphate, six pounds; quick lime, six pounds; water fifty gallons. This is

known as the 6-6-50 formula. It should be used only upon dormant trees.

When the trees are in leaf the following 4-4-50 formula is used: Copper sulphate, four pounds; quick lime, four pounds; water, fifty gallons.

A weaker formula, known as the 3-6-50 formula, is sometimes used on plants of tender foliage. In Oregon the formula has been successfully used on the peach foliage for prevention of fruit spot, but it is without doubt safer to use the self-boiled lime-sulphur: Copper sulphate, three pounds; quick lime, six pounds; water, fifty gallons. It is of great importance that bordeaux be properly made. The mixture must be fresh each time it is used. The ingredients may, however, be stored in stock solution for an indefinite period. Always use wooden or earthen vessels in preparing bordeaux or the solution of bluestone.

When large quantities of bordeaux mixture are required it is most convenient to have stock solutions made up containing one pound per gallon of the respective ingredients. Take a fifty-gallon barrel of water and suspend near the top a coarse sack containing fifty pounds of crystallized or granulated commercial copper sulphate. It will dissolve in a few hours. It is convenient to arrange



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

TWO ACRES OF THOROUGHBREDS GROWN BY J. H. SHIRK OF TULARE, CALIFORNIA

this the night before the spraying is to be done. In another barrel place fifty pounds of lime freshly slaked. For this purpose choose clean stone lime of the best quality. Slaking should be done carefully. Water should be added a little at a time so that slaking will take place rapidly. The process should be watched carefully and the mixture stirred constantly while the slaking is going on, adding water as needed to prevent burning, as lime should never be allowed to become dry while slaking or it will burn, nor should it become entirely submerged

with water. The mixing can be conveniently done with a hoe. When thoroughly slaked make up to fifty gallons with water.

If small quantities only of stock solution are needed any quantity can be made in the above mentioned proportions. If the spray is to be applied to peach trees in foliage use the 3-6-50 formula. It is always best to test the mixture before applying it with potassium ferrocyanide.

These stock solutions can be kept for an indefinite time if water is added to replace that lost by evaporation. They should be kept covered to prevent dilution by rains. Made up in this way, each gallon of stock solution represents one pound of ingredients. Each should be stirred very thoroughly before any is taken out.

In making up the mixture from these stock solutions both the copper sulphate and the lime should be diluted before being mixed. Have two dilution barrels or tanks. If the 6-6-50 formula be used, and the spray tank holds one hundred gallons, take twelve gallons of copper sulphate stock solution and dilute to make fifty gallons in one barrel, and take twelve gallons of the lime paste and dilute in the same manner in the other barrel. The lime paste should be run through a fine strainer.

For convenience it is well to have a platform built high enough to permit the liquids to flow from the dilution tanks into the spray tank. Allow the two diluted solutions to run together through a twenty-mesh copper wire strainer into the spray tank, mix well and apply at once. (It is always best to test the



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

FIELD OF KELLOGG THOROUGHbred BERRIES GROWN BY C. W. HOGUE AT FRANKLINVILLE NEW YORK

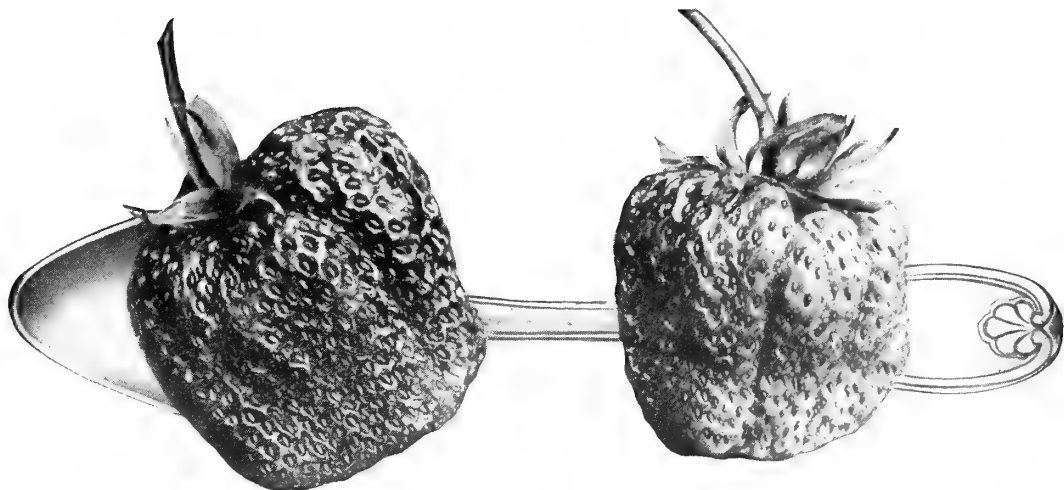


mixture before applying with potassium ferrocyanide.)

Buy ten cents' worth of potassium ferrocyanide at the druggist's and dissolve in the least possible quantity of water. Label the bottle poison. Take out a cupful of the well stirred mixture and allow a drop or two of the potassium ferrocyanide to drop into it. If the drop turns yellow or brown on striking the mixture it will be necessary to add more lime. Add lime until no discoloration is seen when tested in this way. If this precaution is not taken the spray may cause injury to the foliage.

Use a good pump that gives a strong, constant pressure; have good nozzles that give a fine, mist-like spray and cover the tree thoroughly. Always rinse out the spray tank, hose and rod with clean water after using. Use only brass rods and connections, as bordeaux mixture will gradually attack iron.

Unfortunately even the most carefully prepared bordeaux will sometimes cause serious russetting of the fruit of apple. This russetting seems to be the most serious when rainy or at least humid weather prevails at the time of the first spraying after the blossoms fall, and as



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

A GLEN MARY AND WILLIAM BELT BERRY

such conditions usually do thus prevail, at least in the Willamette Valley, "spray injury" following the use of bordeaux often becomes almost as serious as the fungus injury it was expected to prevent.

(b) Self-Boiled Lime-Sulphur—This mixture, introduced and perfected by Scott, of the Department of Agriculture, is especially desirable for use on peach foliage. The experience in most sections of the country has been that bordeaux mixture and most other fungicides are unsafe to use on peach and other tender

foliage. This fact has led to the perfection of the self-boiled lime-sulphur. This mixture, prepared and recommended for use on the peach foliage, is in effect a mechanical mixture of lime and sulphur, with only a very small percentage of sulphides in solution. In Oregon this spray is especially recommended for use against brown rot and fruit spot of peach. The formula recommended is as follows: Lime, eight pounds; sulphur, eight pounds; water, fifty gallons. The preparation of the mixture as described by

Scott in Bulletin No. 174 of the Bureau of Plant Industry is as follows:

"The mixture used in our experiments during the past season was composed of eight pounds of fresh stone lime and eight pounds of sulphur (either flowers or flour may be used) to fifty gallons of water. This mixture can best be prepared in rather large quantities, say enough for two hundred gallons at a time, making the formula thirty-two pounds of lime and thirty-two pounds of sulphur, to be cooked with a small quantity of water (from eight to ten gallons) and then diluted to make two hundred gallons.

"The lime should be placed in a barrel and enough water poured on to almost cover it. As soon as the lime begins to slake the sulphur should be added, after first running it through a sieve to break up the lumps. The mixture will require constant stirring, and more water should be added as needed to form a thick paste at first and then gradually a thin paste. The lime will supply enough heat to boil the mixture several minutes. As soon as it is well slaked water should be added to cool the mixture and prevent further cooking. It is then ready to be strained into



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

AN OBJECT LESSON TO THE OWNERS OF SMALL PIECES OF LAND SHOWN IN ABOVE THE PICTURE WHICH IS THE HOME GARDEN OF F. E. BEATTY, PRESIDENT AND MANAGER OF THE R. M. KELLOGG COMPANY, THREE RIVERS, MICHIGAN

This piece of ground by actual measurement is three by seventeen rods and contains a complete assortment of vegetables, several kinds of bush fruit, grapes, plums, cherries and young apple trees, besides many beautiful varieties of roses grown as a border. It adds value and affords untold pleasures of fresh fruit and vegetable for the home table.



the spray tank, diluted and applied to the trees.

"The stage at which cold water should be poured in to stop the cooking varies with different limes. Some limes are so sluggish in slaking that it is difficult to obtain enough heat from them to cook the mixture, while other limes become intensely hot on slaking and care must be taken not to allow the boiling to proceed too far. If the mixture is allowed to remain hot fifteen or twenty minutes after the slaking is completed the sulphur gradually goes into solution, combining with the lime to form sulphids, which are injurious to peach foliage. It is therefore very important, especially with hot lime, to cool the mixture quickly by adding a few bucketfuls of water as soon as the lumps of lime have slaked down. The intense heat, violent boiling and constant stirring result in the production of a uniform mixture of finely divided sulphur and lime, with only a very small percentage of the sulphur in solution. The mixture should be strained to take out the coarse particles of lime, but the sulphur should be carefully worked through the strainer.

"In applying the self-boiled lime-sulphur mixture the spraying outfit should be equipped with a good agitator. The mixture settles to the bottom of the tank, and unless kept thoroughly agitated cannot be evenly applied."

Since commercial lime-sulphur has caused some burning of fruit and foliage of the apple in some sections of the Northwest we would suggest that the self-boiled lime-sulphur be tried for the third scab spray. Either the 8-8-50 or

10-10-50 formula may be used. While not as good as the commercial lime-sulphur against apple scab Scott finds that it will control mild cases of scab, and in his experiments was entirely harmless to foliage and fruit.

Arsenate of lead for codling moth may be safely used with the self-boiled mixture in the same proportions as recommended when mixed with bordeaux or commercial lime-sulphur.

It is often desirable and practicable to use sprays which combine both fungicidal and insecticidal qualities. The time, expense and annoyance of one or more sprayings may frequently be eliminated by such combinations. Thus bor-

deaux mixture and paris green, or arsenate of lead, has long been used as a combined spray for apple scab and codling moth, and the expense of controlling these two important apple pests has thereby been materially reduced. This spray, however, combines only the fungicidal value of bordeaux and the food poison value of the arsenical. It is of little or no value as a contact insecticide; in other words, it is of no value against scale insects, plant lice and other sucking insects.

During the past four years we have conclusively demonstrated that the lime-sulphur spray, which has long been known as the most satisfactory winter spray for San Jose scale, has fungicidal qualities nearly or quite equal to those of bordeaux. We have also conclusively demonstrated that it may be used in combination with arsenate of lead without detracting from the value of either, and that when so used it is at once an efficient contact insecticide, food poison spray and fungicide.

It also has the advantage that when properly diluted it may be used either as a winter or summer spray.

As a winter spray one application of the lime-sulphur spray each year will do more for the neglected orchard than can be done in any other way by the same expenditure of cash and energy. It not only destroys San Jose scale, but it also destroys the branch form of woolly aphis, the eggs of the green aphis, the pear leaf blister mite, the hibernating larvae of the bud



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

KELLOGG'S THOROUGHbred BERRIES IN PEACH ORCHARD OF MRS. T. F. TURNER, UTICA, ILLINOIS



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan

FIELD OF KELLOGG'S THOROUGHbred PEDIGREE PLANTS GROWN BY CARL J. PIPER  
KENSINGTON, MINNESOTA

moth, together with most other insects which may happen to be wintering upon the trees. It is also a good fungicide. If applied in the fall it is nearly or quite equal to bordeaux as a preventive of apple tree anthracnose, and applied to peach trees just before the buds open in the spring it is a preventive of the peach leaf curl.

As a summer spray, the results of the past four seasons' work at the Oregon Experiment Station prove conclusively that when properly diluted it can be safely used upon the apple, pear, plum and prune, potato, celery and other hardy plants, and that it gives much better results in controlling apple scab than does bordeaux, which has been the standard spray for this disease, and, further, that it is much less likely to cause the disastrous "spray injury" to fruit and foliage, which is so common, and often serious, when bordeaux is used.

**Preparation of Lime-Sulphur**—The "stock solution" method of preparing lime-sulphur is now most generally used in this state. A number of brands of commercial solutions which have only to be diluted with water to be ready for use are now offered for sale, and careful experiments extending over several seasons have demonstrated that these sprays are fully equal to the old home-made lime-sulphur spray.

The chief fault to be found with these commercial preparations is that they cost too much. The retail price is \$7 to \$10 per barrel of fifty gallons. The lime and sulphur necessary to prepare fifty gallons of stock solution, which is equally as efficient, costs at present retail prices approximately \$3. It may be prepared as follows: Sulphur (best fine ground), one sack, one hundred and ten pounds; lime (best grade, unslaked), sixty pounds; water sufficient to make sixty gallons. Slake the lime, mix the sulphur into a thin paste with a little water, add it to the lime, add sufficient water to make all told sixty gallons; bring it to a boil and boil vigorously for thirty to forty-five minutes, stirring constantly. The sediment is then allowed to settle, after which the clear, amber-colored liquid is drawn off and may be stored in tanks for future use.

Every grower who expects to prepare his own spray by the stock solution method should provide himself with a Beaume's acid scale hydrometer. Such an instrument, which should not cost over one dollar, furnishes a very simple and convenient method of testing the strength of the solution. Having thus determined the strength of any commercial or home-made stock solution it may be diluted for winter or summer use according to the following table, i. e.: If stock solution tests 29 degrees for



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
STRAWBERRY FIELD OF GLEN MARY, WILLIAM BELT AND DORNAN BERRIES GROWN BY G. A. FRIEND, ZOAR, OHIO

winter spray use one gallon to nine and a half gallons of water; for summer spray use one gallon to twenty-nine gallons of water. If stock solution tests 31 degrees for winter spray use one gallon to eleven gallons of water, or for summer spray one gallon to thirty-one gallons of water.

Stock Solution	Winter Dilution	Summer Dilution
32° Beaume scale.....	1—12	1—32
31° Beaume scale.....	1—11	1—31
30° Beaume scale.....	1—10	1—30
29° Beaume scale.....	1—9½	1—29
28° Beaume scale.....	1—9	1—28
27° Beaume scale.....	1—8½	1—27
26° Beaume scale.....	1—8	1—26
25° Beaume scale.....	1—7½	1—25
24° Beaume scale.....	1—7	1—24
23° Beaume scale.....	1—6½	1—23
22° Beaume scale.....	1—6	1—22

General directions as to how many times to spray and when the applications should be made are at best unsatisfactory. The answer to both questions depends not only upon the variety of fruit to be sprayed, but also upon the conditions prevailing in the orchard to be sprayed, and the relative importance of the orchard crops to other crops. The orchardist can afford to do more spraying than can the farmer, but usually obtains satisfactory results with fewer applications—first, because he is ordinarily better equipped for the work and has a better knowledge of why he sprays, and, second, because his orchard is usually less seriously infested owing to the better care it has received.

An almost universal practice in this state—and a good one—is to spray the orchard, whatever the kind of fruit, with lime-sulphur at some time when the trees are dormant. While this application is made primarily for San Jose scale we believe there is no other which has such a generally beneficial result. It is the annual "house-cleaning" of the orchards.

The best time for this winter spraying is immediately after the leaves drop in fall—even before they are all off—or just before the buds open in spring. Personally we would prefer the latter were the orchard seriously infested with San Jose scale, the former were it badly infested with anthracnose.

It should be noted, however, that since the introduction of the use of lime-sulphur as a spring and early fall spray for apple scab and apple tree anthracnose that there is much less need for winter applications. In fact whenever the spring and fall application of lime-sulphur are made, all winter spraying may be omitted, except in the case of orchards which have been badly neglected.

In the following pages we have briefly outlined the applications which would be advisable in a theoretical orchard which is supposed to be infested with all of the important pests which are known to occur in the state. In practice it will be rare, indeed, that any orchard will need all the sprayings indicated, but about all that we can do is to outline a theoretical number of sprayings and to reiterate the suggestion which was made at the beginning, that "it is of prime importance that every fruit grower should know what diseases and insects are prevalent in his district and be able to recognize them."

It is advisable to spray a young apple orchard twice each year for the purpose of preventing any insect pests or diseases from becoming established. First, spray with lime-sulphur, summer strength, at the time when bearing trees are just coming into bloom. (Corresponds to the first scab spray for bearing trees.) If aphids are troublesome, add black leaf or black leaf 40, according to formula given above. Second, spray shortly after the fall rains begin, or about the first of

Continued on page 48

# NORTHWESTERN FRUIT EXCHANGE, PORTLAND, OREGON

A BRIEF PROSPECTUS WITH PHOTOS OF ITS ACTIVE OFFICERS, BY C. A. MALBOEUF

THE fruit growers of Oregon, Washington and Idaho saw the sunrise of relief in the solution of the marketing problem when the Northwestern Fruit Exchange was organized July 29, 1910. For the first time in the history of Northwest fruit, an effective and most economical means was offered to the grower to broaden the markets for his product, insure its direct movement to the consuming trade and justify returns upon the basis of actual market values, as regulated by supply and demand. These features

could only be brought about by co-operation of districts through one body, the latter having a thoroughly equipped, powerful and scientific selling machinery to act for the whole. The Northwestern Fruit Exchange, being directly composed of local associations, with its stock, policy and management under the absolute control of the fruit growers themselves, was a fulfillment of the long cherished hope of the grower. Broad-minded, far-seeing fruit growers headed the Exchange. They had large interests of

their own to protect and upbuild, but they had also the welfare of the entire Northwest at heart, and this was the basic principle of the organization.

The advent of the Exchange in the field at the "eleventh hour" in 1910, although a severe handicap, does not appear to have lessened the effectiveness of its work in any way. It marketed seven hundred cars of fruit, representing practically every section of the three states mentioned, with remarkable success. Ninety per cent of this volume consisted of f.o.b.



REGINALD H. PARSONS, President  
Medford, Oregon  
Director Rogue River Fruit and Produce  
Association



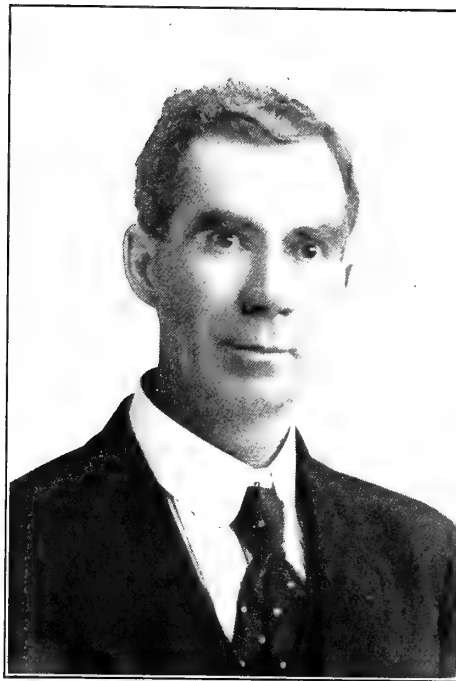
W. N. IRISH, Vice-President  
North Yakima, Washington  
President Yakima County Horticultural Union



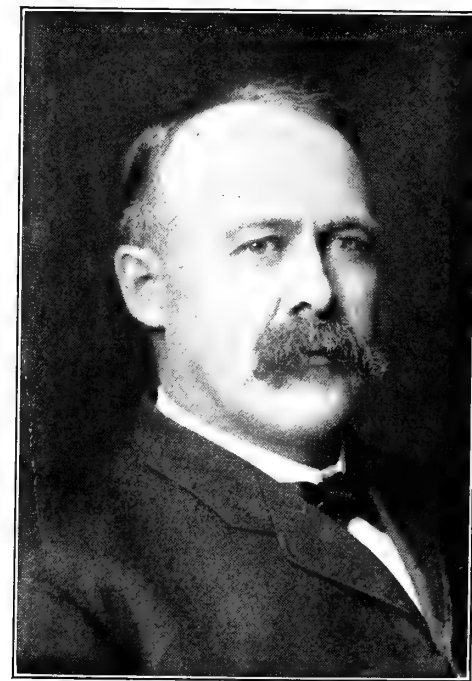
W. F. GWIN, Treasurer and General Manager  
Portland, Oregon  
Secretary and Treasurer Kenmar Orchard Company



A. C. RANDALL, Director  
Talent, Oregon  
President Talent Orchard Company



WILLIAM M. RICHARDS, Director  
Seattle, Washington  
Formerly Vice-President Yakima County Horticultural  
Union



HON. FREMONT WOOD, Director  
Boise, Idaho  
President Idaho Horticultural Society





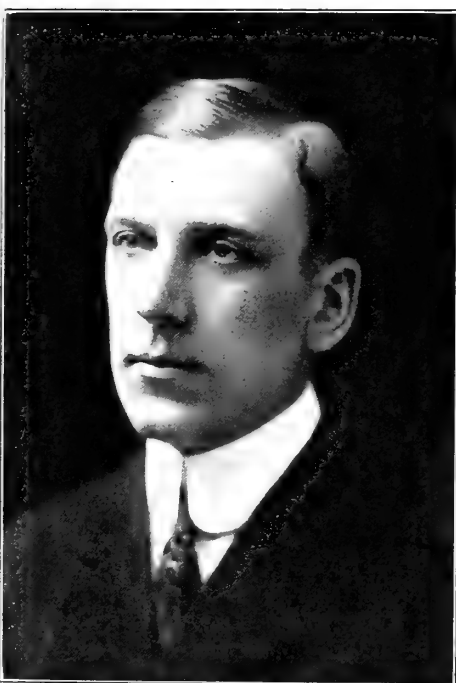
H. M. GILBERT, Director  
Toppenish, Washington  
President Richey & Gilbert Company



JOHN S. EVANS, Director



CHARLES A. MALBOEUF, Secretary



D. H. WHITE  
Assistant Treasurer and Assistant Secretary



J. CURTIS ROBINSON, Traffic Manager



A. A. PRINCE, Cashier

sales. This in itself was a record, but its seven hundred cars went to 125 different markets of the United States, Canada and Europe, a number of which were heretofore unacquainted with the products of this section. Nowhere in the annals of Northwest fruit do records show as large a number of markets used in any single previous season. As to prices received, the Exchange secured for its growers a higher basis f.o.b. shipping point, district for district, than was returned by any other means of distribution. Its average net results stand pre-eminent in comparison with those of any other marketing agency.

The prestige and confidence already gained by the Exchange is illustrated by its prospects for 1911. The following associations have signed membership contracts with it for the ensuing season: Buhl Fruit Growers' Association, Buhl, Idaho; Cashmere Fruit

Growers' Union, Cashmere, Washington; Cove Fruit Association, Cove, Oregon; Clearwater River Fruit Growers' Union, Orofino, Idaho; Dalles Fruit Growers' Association, The Dalles, Oregon; Dryden Fruit Growers' Union, Dryden, Washington; Dufur Valley Fruit Growers' Union, Dufur, Oregon; Emmett Fruit Growers' Association, Emmett, Idaho; Eugene Fruit Growers' Association, Eugene, Oregon; Farmers' Union Exchange, Union, Oregon; Imbler Fruitmen's Association, Imbler, Oregon; La Grande Fruit Association, La Grande, Oregon; New Plymouth Fruit Growers' Union, Ltd., New Plymouth, Idaho; Parma-Roswell Fruit Growers' Association, Parma, Idaho; Payette Fruit Packing Co., Payette, Idaho; Rogue River Fruit and Produce Association, Medford, Oregon; Salem Fruit Union, Salem, Oregon; Spokane-Highland Fruit Growers' Union, Kiesling, Washing-

ton; Stevens County Fruit Growers' Union, Meyers Falls, Washington; Umpqua Valley Fruit Union, Roseburg, Oregon; Weiser River Fruit Association, Weiser, Idaho. This list includes some of the strongest associations in the Northwest, with a total of between 2,000 and 3,000 cars now in sight for the year's shipment. Other unions have applied for membership into the parent body, and with the formation of new associations, through the efforts of the Exchange, its work promises to be one of the leading factors in marketing the 1911 crop.

Owing to its enlarged membership, which naturally represents a greatly increased volume of business, the Exchange has found it necessary to move into larger quarters, and is now located on the fourth floor of the Spalding Building, Portland.



THE TWIN FALLS, IDAHO, ONE HUNDRED EIGHTY FEET HIGH



IRRIGATION SYSTEM, TWIN FALLS, IDAHO

Continued from page 45

October, using either bordeaux mixture 4-4-50, or lime-sulphur, summer strength.

Treatment for bearing orchard: First, spray with lime-sulphur, diluted to summer strength, just as the blossom buds begin to separate in the cluster and show color, or slightly before. This is the first spray for apple scab. In case bud moth or other leaf-eating insects are present, add arsenate of lead in the proportion of two pounds to each fifty gallons of spray. If aphids are troublesome, add black leaf or black leaf 40 as above. Second, spray with lime-sulphur, summer strength, to which two pounds of arsenate of lead has been added to each fifty gallons, just after the petals have fallen. This is the second scab and the first codling moth spray. Third, in orchards that are badly infested with apple scab, spray ten days or two weeks after the second spraying with lime-sulphur, summer strength, or with self-boiled lime-sulphur (8-8-50). This is distinctly a scab spray, and in

regions where scab is not prevalent may be omitted. Where codling moth or leaf-eating insects are present, two pounds of arsenate of lead should be added to each fifty gallons of spray. In those sections of the state where scab is not present and it is necessary to spray for leaf-eating insects, arsenate of lead may be diluted with water in the proportion of two pounds to fifty gallons. Fourth, the second spray for codling moth should be applied at the time the moths are depositing eggs for the first generation, or just as the very earliest worms are beginning to enter the fruit. In the greater portion of the Willamette Valley this will be usually between June 25 and July 1, although the dates may vary somewhat with the season. This date is also approximately correct for most portions of the Hood River Valley, but in Southern Oregon and the warmer parts of the Grande Ronde Valley this application should be made somewhat earlier. Use

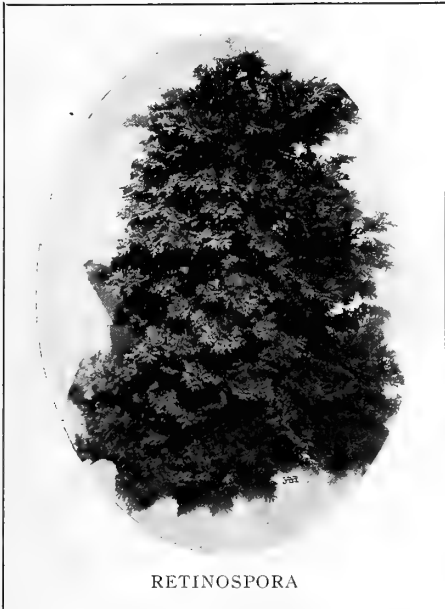
two pounds of arsenate of lead to fifty gallons of water. Fifth, an application of arsenate of lead should be applied as a preventive of injury by codling moth about four or five weeks after the fourth spraying. In the Willamette Valley this will be about August 1. Sixth, soon after the fall rains begin, or about October 1, it is advisable to spray with summer strength lime-sulphur as a preventive of apple tree anthracnose. If bud moth has been prevalent, add arsenate of lead in the proportion of two pounds to fifty gallons of spray. Seventh, as soon as possible after the fruit is harvested, spray with bordeaux mixture, 6-6-50, or lime-sulphur, winter strength, as a preventive of anthracnose. It is also possible that this and the preceding spray will have a beneficial effect in reducing the spread of apple scab on the foliage and fruit, which frequently is a serious trouble in the fall in some sections of the Northwest. The first, second and third sprays for the pear correspond to those recommended for the apple, where the pear scab is prevalent. If only codling moth is present, then spray as recommended under the second, fourth and fifth sprays for the apple. For the pear no fall spraying is necessary, except where the bud moth is prevalent. In that case use arsenate of lead, two pounds to fifty gallons of water, from September 15 to October 1.

In treating the peach, first spray with lime-sulphur, winter strength, just as the buds are swelling in the spring, but before the terminal buds show any green color. This application, if made in a thorough manner, will prevent peach leaf curl and destroy San Jose scale. This is the most important single spray for the peach. Second, if the peach spot has been serious, spray in spring after the fruit is set with self-boiled lime-sulphur, 8-8-50. (The time for this spray is about May 10 for



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
 KELLOGG'S THOROUGHbred BERRIES ON THE RANCH OF D. S. SPENCER, GENERAL PASSENGER  
 AGENT OF THE OREGON SHORT LINE RAILWAY, AT TWIN FALLS, IDAHO  
 Money made from the land while the trees are growing up





RETINOSPORA

Southern Oregon, correspondingly later for other sections.) Third, apply self-boiled lime-sulphur, 8-8-50, about three weeks after the second spraying. If the powdery mildew of the peach appears, frequent applications of self-boiled lime-sulphur should be tried as a remedy, beginning as soon as petals fall, spraying at intervals of ten days. If the disease becomes firmly established, cut back severely and spray as suggested. Fourth, where California peach blight is prevalent, spray with bordeaux mixture or lime-sulphur, winter strength, in the fall about November 1. It is possible that ordinary cases of fruit spot will be kept under control by this fall application, rendering the second and third applications unnecessary except in cleaning up an orchard in which the trouble has become firmly established. It is probable that the second and third sprays recommended above would also answer for holding brown rot in check. In case the brown rot is serious, another application of self-boiled lime-sulphur is recommended about one month before fruit ripens. Only the first and fourth sprays mentioned will be necessary under ordinary conditions in Oregon, since the brown rot is not commonly very serious, and the spring sprayings for fruit spot are considered necessary only in cleaning up an orchard in which this disease has become firmly established.

Ordinarily one spraying with lime-sulphur, applied to prune and plum trees during the dormant season, is sufficient. Where brown rot is prevalent, however, the following should be given in addition to the dormant spray: First, three or four weeks after petals fall spray with bordeaux mixture or lime-sulphur, summer strength. Second, repeat after three weeks. Third, repeat one month before fruit ripens.

The cherry rarely needs more than one application of spray, and this should be applied during the dormant season, preferably when the buds begin to swell. If, however, the shot hole fungus is serious, the following method is recommended: First, spray with either bordeaux mix-

ture, 3-4-50, lime-sulphur, 1-40 (basis of 30 degrees Beaume stock solution), or self-boiled lime-sulphur, 10-10-50, about a month after blossoming. Second, repeat as soon as the fruit is picked. Third, repeat about three weeks to one month after second spraying. If brown rot is

present in a serious enough form to warrant spraying, apply either of the above mentioned sprays: First, one week after petals fall; second, repeat three weeks later. Whenever cherry slugs become troublesome, spray with arsenate of lead, two pounds to fifty gallons.

## SHANENDOAH VALLEY FRUIT GROWERS' MEETING

Stanton Dispatch and News, Stanton, Virginia, March 31, 1911

ONE hundred and seventy thousand dollars' worth of business during its first business year, and that with a working fund of only \$150 to start, was the remarkable showing made by the Shenandoah Valley Fruit Growers' Association, according to reports presented at a meeting of stockholders held here yesterday in Assembly Hall. This was probably the most important meeting ever held by the organization, and was largely attended.

Besides transacting much other business, the association decided to increase its capital from \$500 to \$10,000 minimum, and from \$25,000 to \$50,000 maximum. To allow the name of the association being changed from what it is at the present time to the Virginia Fruit Growers, incorporated, it was decided to apply to the state corporation commission for an amendment to the present charter.

Officers for the ensuing year are: President, M. F. Gilkeson, Staunton; vice-president, Wm. McAllister, Covington; secretary-treasurer, J. L. Phillips, Staunton; general manager, Clarence W. Moomaw; directors, those named above, with J. O. Greaver of Lexington, J. L. Moomaw of Clover Dale, and B. E. Watson of Waynesboro. All of the old officers were elected with the exception of C. G. Crawford of Kernston, who retired as vice-president and director, and was succeeded by Mr. McAllister.

In presenting his report the president said that the work of the organization was being hampered by the action of some of the members who sold their crops independently. He then stated that it is generally conceded that the association by its work has succeeded in bettering prices, not only to the members, but to every fruit grower in territory covered by the organization—the increase obtained for the latter certainly averaging not less than fifty cents a barrel.

General satisfaction was expressed at the fine showing made during the first business year, and the body moved that all reports of the officers, together with the addresses made by members, be printed for distribution to members who had been unable to attend the meeting as well as to growers generally.

Especial gratification was shown in the fact that during the season past the association imported the first expert box packers ever brought to the state, thereby inaugurating a new era in the fruit industry in Virginia. Fancy apples, it is claimed, are selling much higher each year when packed in boxes and not in barrels. During the year the association marked all its shipments with its own registered "F. F. V. Brand," and

the name of the grower was stamped on each package. This has resulted, it was pointed out, in the individual growers receiving communications complimentary to their products from as far off as the British Isles.

For a thorough understanding of the marvelous achievements of the Shenandoah Valley Association during its first year several facts must be recalled. While the organization was formed three years ago, last year was the first year it had really set out to do business. Another thing which makes the showing so remarkable is the fact that when Clarence W. Moomaw assumed the general management last July the season was well advanced and there was little or no time to make preparations which ordinarily would have seemed essential to success. What makes the year's showing seem still more remarkable is the fact that when Mr. Moomaw took hold of the management the treasury fund contained only \$150, and with only this small sum available he was forced to plan for the season's business. Mr. Moomaw, by his successful conduct of the association's affairs last season, has won the highest esteem of officers and members, and under his capable direction even greater things seem promised this year.

◆ ◆ ◆

THE MARGARET SNELL CLUB, composed of students of the domestic science and art department at Oregon Agricultural College, gave a farewell reception Wednesday, May 24, in honor of Dean Juliett Greer, whose resignation brings to a close three years of efficient service in the building up of an excellent course of study for future home-makers and teachers of home science and arts. She will go East at the end of the college year, in June.



Copyright 1910 by R. M. Kellogg Company  
HOME AND PARTIAL VIEW OF STRAWBERRY  
FIELD OF JULIUS E. WALBRIDGE  
KIRKWOOD, MISSOURI

# BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF  
THE NORTHWEST FRUIT GROWERS' ASSOCIATION  
A MONTHLY ILLUSTRATED MAGAZINE  
PUBLISHED IN THE INTEREST OF MODERN  
FRUIT GROWING AND MARKETING  
ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
REMITTANCES MADE PAYABLE TO

Better Fruit Publishing Company

E. H. SHEPARD  
EDITOR AND PUBLISHER

C. R. GREISEN, *Assistant Editor*

H. E. VAN DEMAN, *Contributing Editor*  
STATE ASSOCIATE EDITORS

## OREGON

A. B. CORDLEY, *Entomologist*, Corvallis

C. I. LEWIS, *Horticulturist*, Corvallis

P. J. O'GARA, *Pathologist and Entomologist*,  
Medford

## WASHINGTON

W. S. THORNBUR, *Horticulturist*, Pullman

A. L. MELANDER, *Horticulturist*, Pullman

## COLORADO

C. P. GILLETTE, *Director and Entomologist*,  
Fort Collins

E. B. HOUSE, *Chief of Department of Civil and  
Irrigation Engineering*, State Agricultural  
College, Fort Collins

E. P. TAYLOR, *Horticulturist*, Grand Junction

## IDAHO

J. M. ALDRICH, *Entomologist*, Moscow

## UTAH

DR. E. D. BALL, *Director and Entomologist*, Logan

LEON D. BATCHELOR, *Horticulturist*, Logan

## MONTANA

O. B. WHIPPLE, *Horticulturist*, Bozeman

## CALIFORNIA

C. W. WOODWORTH, *Entomologist*, Berkeley

W. H. VOLCK, *Entomologist*, Watsonville

## BRITISH COLUMBIA

R. M. WINSLOW, *Provincial Horticulturist*, Victoria

SUBSCRIPTION PRICE \$1.00 PER YEAR  
IN ADVANCE, IN UNITED STATES AND CANADA

FOREIGN SUBSCRIPTIONS, Including Postage, \$1.50

ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,  
at the Post Office at Hood River, Oregon,  
under Act of Congress of March 3, 1879.

## CENTRAL SELLING AGENCY.—

It is now four months since this suggestion was made and three months since the first meeting was held at Portland, a second meeting being held in Walla Walla, which adjourned subject to the call of the chairman for a third meeting, for which notices have not yet been sent out.

Yakima Valley is the largest fruit producing section in the Northwest. The Yakima Republic, which is in close touch with the fruit growers of Yakima Valley, comments as follows: "There is not, and there never was, any reason to believe that such an ambition would succeed under present conditions, and if Wenatchee and other districts had all taken hold of it it would have petered out in a short time or would have fallen into the hands of private speculators. Why talk about organizing the fruit men of three states when we have not organized any district, when we have not formed a working association in any single valley or neighborhood, when the apple growers in no section or territory have come forward and signified their willingness to organize, or even expressed their belief in the principals of organization? To go ahead with such a plan as has been outlined is like building a house without a foundation. The Yakima Republic will be frank about this matter and will say that it has no great amount of confidence in the central agency plan. It is not convinced that anything of the

kind is necessary just now, even though it may be practicable. What we of the Yakima country want is an organization of the Yakima fruit growers which will enable those engaged in the industry to present a solid front to the world on all matters that concern it, and will enable our producers to deal as one man or business institution with those who grow apples, those who furnish supplies and those who grow fruit. Organizations such as this have done much for Hood River and Wenatchee farmers. They are wholly practicable in any producing district. They may be made the basis of a central selling agency when they are perfected and are built to command the confidence of the producers and the respect of dealers, and the formation of such an agency will be a very simple matter then."

The editor of "Better Fruit" has had eight years' practical experience in association work, having been a director and manager of the Hood River Fruit Growers' Union for six years, three years the manager of the Hood River Apple Growers' Union and four years a director in the Hood River Apple Growers' Union. During this period the editor has been actively engaged in the practical problem of marketing fruit through an association and has kept in constant touch with the associations of other districts, either by correspondence, personal interviews and visits in the districts, with their directors and managers. When a call was first issued for a central selling agency the editor of "Better Fruit" declined to express an opinion for the reason that he felt much good would come out of meetings held for this purpose through the exchange of ideas and the acquaintanceship that would be formed among fruit growers from the different sections; which would lead to more harmony and a better understanding in the future, and for the further reason that he did not wish to be misunderstood, and by presenting his views at that time they might be construed to be antagonistic, which, in a measure, might interfere with the good that could be reasonably expected to come out of such meetings. The Yakima Republic expresses some views in its article which were apparent when the movement first started to those who had had a great deal of practical experience and had actually been engaged in association work, either as directors or as managers. The basis of such an institution must be built on sound principles. The suggestion presented to the first meeting by the editor was that no plan which called for all the apples of one variety in the different districts being packed according to a standard grade, being sold at the same price and settled for at the same figure to each of the districts, would be acceptable to all of the districts. Although this idea was construed by some as being antagonistic, still it was not meant in this way. The idea is absolutely sound and must prevail if such an institution is ever to be organized. The fruit of each district must be sold on its own merit; the trade will only purchase and pay the market prices on any commodity. An

institution of such magnitude must be built on large units, and it is our opinion that such an institution will find much difficulty in organization if its units are individuals. To some of our intimate friends the idea was expressed that if the very large sections like Southern Oregon, Yakima, Wenatchee and Hood River, where good fruit growers' associations already existed, could be united on a plan which would be harmonious and acceptable to each of the four districts mentioned, that the central selling agency would be well under way toward forming an organization and that a plan which would be acceptable to these districts on account of their being the oldest in the line of organization work, and for the further reasons that their associations contained the largest membership of any of the associations of the Northwest, would naturally be founded on true principles, and consequently would be acceptable to the smaller sections with smaller associations.

At the end of four months the action taken by these four districts is just what was anticipated by the editor of "Better Fruit" and others who have had much practical experience and have given the matter serious thought. Wenatchee voted two to one not to go into the central selling agency. The Yakima Republic, by the article from which we have quoted, has indicated that at present it is not in favor of a central selling agency. We understand that the Southern Oregon District Association has decided to market its apple crop this year through the Northwestern Fruit Exchange. The Hood River Apple Growers' Union, at its annual meeting, did not vote or bring up for discussion the central selling agency plan, but an active discussion took place in reference to plans and methods of improving the present organization, perfecting its selling plans, increasing its capital stock from \$25,000 to \$50,000, and decided to conduct its own business in the future along lines similar to those in the past and to improve each department of its business and increase its field of operation, and to improve each part of the present organization in every way possible. So there you have the views and the conclusions of the four largest fruit sections in Oregon and Washington.

It is rumored that some of the associations in Southern Idaho will conduct their own business on different plans with a view to bettering their methods, while some associations, we have heard, will market their fruits through the Northwestern Fruit Exchange. In the deciduous fruit sections of California there already exist several large incorporated companies for marketing the fruit, which companies are not owned or controlled by the growers. Among such may be mentioned the Earl Fruit Company, The Pioneer Fruit Company, The California Distributors and several others. These companies have acted in harmony with each other during the past few years without putting up personal fights, for which the grower would have to pay. The Stewart Fruit Company is an inde-

Continued on page 53.

# Land Bargains

In the Famous  
White Salmon Country

A partial list of bargains for sale by

## R. FIELD & CO.

WHITE SALMON, WASH.

An ideal fruit belt, mild climate and wonderful scenery; pure water and fuel in abundance; a productive and inexhaustible soil, assuring large and unending crops; a ready market, with the best of transportation facilities.

You will have to act quickly if you want any of these, because land in this famous country is rapidly increasing in value. We have sold many tracts of land in the last three years, and those who bought from us are well pleased. We can refer you to them. We also have bargains in city property and are daily listing other outside tracts, which we will be glad to show you. We guarantee every tract as good as represented.

Following are only a small portion of the lands we have on our list:

300—80 acres 9 miles out; good apple land; 60 acres mostly level, 20 acres rolling, 3 acres cleared; 125 fruit trees set out; fine creek running through the place. Price \$6,000; half cash.

301—30 acres 1 mile from town; 20 acres cleared, 15 acres in 3-year-old fruit trees, 1½ acres in strawberries; running water on this place; on the main road; will make one of the finest homes; close to town; will increase in value every year. Price \$18,000; half cash, rest to suit.

302—160 acres 10 miles out; rich soil; 4 acres in trees just beginning to bear; about 100 acres tillable land, rest rolling, with fine fir timber on it. A cheap place at \$5,000; terms given.

303—2½ acres, all in fruit trees, mostly bearing; joining town. Price \$2,500, on easy terms.

304—160 acres at Gilmer; rich red shot soil, small house, small clearing; mostly covered with fine saw timber, which will help pay for clearing; good place to divide into small tracts. This can be had for \$5,000 and can get 160 joining for same price. If wanted, this is a fine proposition.

305—80 acres 9 miles out; about 50 acres can be set to fruit trees, rest is hillside pasture. Land can be bought at \$50 per acre; \$2,700 cash, rest time.

306—160 acres in Snowden country; is all good land, covered with pine and fir timber; small house. Price \$40 per acre.

307—A nice 160 acres at Trout Lake, unimproved; some fine timber on it, also a running creek. Price \$20 per acre; easy terms.

308—Nice level town lots with bearing fruit trees on them; 300 to 400 big lots; nice corner lot in Overlander Addition for \$250, on easy payment plan; also some fine houses for sale at bargains.

309—10 acres 1 mile out, unimproved; is nice level land; has some rock on it, but they can be taken off;

would make a nice place for chickens and fruit combined. Price \$1,500.

311—80 acres irrigated land in Twin Falls country, Idaho, all cleared; been in crops 2 years; to trade for unimproved land in White Salmon Valley.

312—20 acres 8 miles out; rich red shot soil; 4 acres in Spitzenberg and Delicious apple trees 2 years old; no rocks and no waste land; a fine tract, sloping gently to the east; about 10 acres slashed and burned; some timber; in the great development section. Cheap at \$3,500.

314—5 acres in a high state of cultivation, 2 miles from town; fine 9-room house; the land is all set to trees 2 and 3 years old, and strawberries between the trees, which on an acre clears up \$150 to \$200 each year. This is a money-maker from the start and will increase every year. Price \$6,500; half cash, rest 3 years time.

315—40 acres close to Snowden, unimproved; the land is half good tillable and half rough, with fine saw timber on it. Can be had for \$1,000; terms, \$600 cash.

316—9 acres 2 miles from town; 8 acres in cultivation and 6 acres set to trees partly in bearing, also loganberries and raspberries, 4 acres in strawberries; this is very early and first berries ripe in locality; small house and barn. Price \$9,000; half cash.

317—30 acres 8 miles from station, unimproved; 20 acres timber, rest in brush land and easy clearing; two fine springs of water on this place. Price \$100 per acre; terms given; half cash.

318—6½ acres, unimproved, 1½ miles from town; well located, fine fruit land; wood on this place will help clear same; right on main road. Price \$250 per acre; half cash, rest to suit.

319—40 acres near Robertville; all good land, unimproved; a fine piece of land to put in apples; land around this place is rapidly increasing in value. Price \$35 per acre; terms.

320—20 acres 1 mile from town; about 15 acres good land, rest rough; red shot soil; has a west slope; would be a nice chicken ranch. This is a great snap at \$125 per acre; terms, half cash.

322—26 acres, all good land; 10 acres slashed and burned, light clearing; the rest is brush land easy to clear. This is a tract of land we can recommend to be first class. Price \$100 per acre; terms.

323—40 acres 3 miles north of White Salmon, unimproved, with fine timber, willow and hazel brush growing on it; some is rolling, some level. This can be had by paying only \$1,000 down, and rest good terms.

324—20 acres 9 miles out, in the apple belt; fine red shot soil; some good fir timber. A bargain at \$2,000; terms.

325—40 acres in the apple belt, in a high state of cultivation; all set to trees; one of the best 40-acre tracts anywhere in the country; very rich soil; keeps plenty of moisture during summer; about 15 acres in 3-year-old orchard and 25 acres in 1-year-olds. Price \$24,000; good terms given.

326—80 acres 4 miles out, in choice apple belt; all unimproved, but easily cleared; mostly all level. Price \$100 per acre; terms.

327—40 acres 3½ miles out; 35 acres level, 5 acres rolling; good rich soil, well watered by springs; about 15 acres out to young orchard; a good house of 5 rooms, barn 30x40, and outbuildings. Price \$7,000; two-thirds cash.

328—160 acres 7 miles out, in good location; 110 acres tillable land, rest pasture land; red shot soil; very fine apple land; has about 5 acres in 3-year-old fruit trees; fine spring of water; small house. A good buy at \$12,000; terms.

329—120 acres 3 miles out; small house and barn; 2 acres cleared and set to young trees, 10 acres more slashed and burned; the land is rolling, but well located. Price \$50 per acre; terms.

330—145 acres near Underwood; 80 acres level, 40 acres rolling, balance good pasture; 5 acres under cultivation, with 5 good springs on the place; small house and barn; about ¾ mile from school and 2 miles from post office; all good strawberry and fruit land. Price \$125 per acre; one-third cash and balance on good terms, at low interest.

331—70 acres near Husum; 20 acres level and balance just rolling enough for good orchard land. The soil is of a combination of red shot and clay, which is the most desirable for apple culture. There are two good springs on the place, which afford sufficient water to irrigate at least 10 acres; 12 acres in cultivation and 3 acres set to commercial orchard. This place lies directly on the Trout Lake road and is a most desirable place for a home, as well as a money-maker, if properly handled. The improvements are all new and good. Price \$7,500; half cash and balance to suit.

339—70 acres, 10 miles from White Salmon, on the Trout Lake road and White Salmon river; 12 acres in cultivation; 3 acres to apple orchard; two good springs, sufficient to irrigate 10 acres; new 7-room bungalow, cost \$2,000; small barn and other outbuildings; two miles from the town of Husum; all the best of shot and clay soil, and is directly on the line of the proposed railroad. This is a snap at \$7,500; one-half cash and balance on good terms.

340—40 acres, 6 miles north of White Salmon; rich red shot soil, fine location; 11 acres in cultivation and set to commercial orchard 2 years old; balance can all be easily cleared. Price \$6,000; one-half cash, balance on good terms.

We shall be glad to give you any further information you may desire. Being well acquainted with the possibilities and resources of the valley, we are in a position to give our customers the best service possible, and gladly make arrangements to show intending settlers the country, if they let us know when they are coming. We respectfully solicit your patronage.

## R. FIELD & CO.

MAIN STREET WHITE SALMON

Reference: White Salmon Valley Bank

# Hood River Commercial Club

## HOOD RIVER, OREGON

### TO THE PUBLIC:

The recent reports from the East and Middle West about the terrific heat has given me an intense feeling of pity for the poor people who are suffering, being compelled at the same time to perform their daily routine duties to earn bread and milk for the children. It makes me feel like taking everyone by the neck and pulling him out here where the sun is shining, the air is clear and pure, and a heat prostration is unknown.

Soon the electric storms with their unpleasant results will pass through many a state.

Here, we the people of Hood River, are enjoying and will enjoy ideal climatic conditions, cool nights—the kind that finds you under a blanket every night—an electric storm almost unknown. We are making an honest, good, clean living, exercising ourselves only to the extent of pleasurable duties. We are paid amply for our endeavors. We are living good, clean lives and enjoying every minute of it. We have opportunities for hundreds of people here who can do the same. An apple orchard in Hood River is a permanent avenue of industry and on these orchards we make from twenty per cent to fifty per cent net, depending upon the kind of orchards, what varieties of apples are grown and the care given the orchard—and the percentage is made on a valuation of \$2,000.00 per acre. We do this year in and year out, because Hood River is the ideal apple section where things have been demonstrated—proven. We know what we can do and will do.

The orchard business is not one where you can invest a few dollars and then sit down and have the dollars roll in to you. You can expect and will realize pleasurable work—the kind that gives you an appetite three times a day and produces for you an ample legitimate profit—a profit as large and permanent as you will find in any business.

I cannot tell you all about it here. Will you write to me and let me tell you all about it? I know I can interest you, and it is to your advantage. We have a booklet that shows what Hood River orchards are, also scenic views that show snow-capped mountains—the ones we see every day in our work.

This is yours for the asking and a few cents in postage for the mailing.

Very truly yours,



Secretary Hood River Commercial Club.

Continued from page 50.

pendent incorporated company doing a successful business. Recently the Pacific Fruit Company has been organized in California for the purpose of selling deciduous fruits, but will remain independent, being under the management of W. C. Walker, formerly sales manager of the Pioneer Fruit Company. We understand that the stockholders of the California fruit exchanges are not to any extent fruit growers themselves, in which respect they differ somewhat from the Northwestern Fruit Exchange, which states that its directors are composed of fruit growers in the Northwest.

Mr. W. H. Stewart, of the Stewart Fruit Company, says: "I believe the constant struggle of one fellow trying to beat the other fellow's price gives the best results to the grower, and the dealer also benefits thereby because everybody is trying to please him. The supply and demand is going to regulate the movement and prices, and there can be no such thing as a trust in perishing products. They must be sold, and the more men there are selling them the wider will be the distribution and the better will be the prices." That competition is the life of trade no one can deny. So long as competition is keen and honest, trade is stimulated and it seems just to state that the more honest firms there are engaged in doing a square business and the more associations there are engaged in selling the fruit the more widely the fruit will be distributed, and distribution is what the fruit grower wants at the present time. However, it must be admitted if private incorporated companies combine, and the stockholders are not composed of fruit growers, such an institution might be enabled to increase the dividends of the stockholders at the expense of the fruit growers.

"Why talk about organizing the fruit men of three states when we have not organized any district?" This is about as sensible a statement as probably could be presented in a few words. No district is yet thoroughly organized, and in the districts where there are associations, up to the present writing, no association has yet succeeded in getting all of the growers to become stockholders or shippers through the association. The Hood River Apple Growers' Union probably

has a greater per cent of growers than any other association. About eighty-five per cent of the apple growers in Hood River Valley are members of their local organization.

The editor is a firm believer in evolution, and it seems common sense to assume that the central selling agency cannot be composed of smaller units than an association, and we doubt if a central selling agency can be organized until several associations in different districts have achieved a moderately reasonable degree of success and until their memberships control a reasonably large percentage of the growers as stockholders. In other words, if we are to have a central selling agency composed and controlled by fruit growers each section must first perfect its association, and, second, each district must unite the different associations in the district under a district organization. When this is done, and not until it is done, will we, in our opinion, have a proper foundation on which to build a central selling agency.

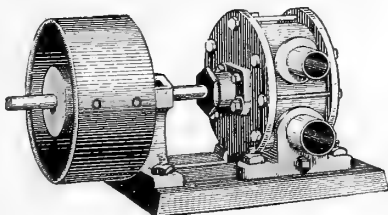
**HOGS AS MONEY MAKERS.**—The Oregon-Washington Railroad & Navigation Company officials are certainly in a position to understand the factors that are important in upbuilding the country, and are doing good work along this line. They have recently published a booklet entitled "The Money Makers; Swine Raising in the Pacific Northwest." This thought presents itself in connection with orcharding. Fruit growers will realize that sooner or later the soil will need additional humus after intense cultivation. Now, the cheapest way to supply this is to seed the orchard to clover, alfalfa or vetch. This booklet contains much information about raising and feeding hogs in general, and we have no doubt but what any fruit grower can find ample time to take care of a moderate sized bunch of hogs, which would bring an additional profit.

**THE AUTOMOBILE INDUSTRY.** This industry is important in connection with the fruit industry as a time-saver for the fruit grower in going to and from town and attending to other business. The popularity of the auto with the fruit grower is evidenced by the

large number that are purchased, not for pleasure, but as time-savers. In large cities the auto trucks are rapidly replacing horses. The automobile is used in hauling fruit to the depot, hauling supplies from town, and in the near future we prophesy a large number of auto trucks will be used by the fruit growers. The average fruit grower on a small place is hardly justified in buying a palace touring car, but what he wants is a practical machine at a moderate price. That the automobile has come to stay, as a matter of business more than pleasure, seems evident in the increased number, there having been 3,723 manufactured in 1899 and 127,289 in 1909. Statistics are not out for 1910, but no doubt such statistics will show a large increase over the previous year.

**BOYS' DEMONSTRATION WORK.** The Department of Agriculture has issued a bulletin on "Boys' Demonstration Work." Boys of today will be men in the future, and to train a boy right is the duty of every parent. That much good can be accomplished for boys in demonstration work has been proven beyond any question. The National Cash Register people were among the first to encourage boys in gardening work by renting a large tract of land for planting, putting a superintendent in charge and apportioning to each boy a small plat on which to raise his crop, all of which was free, and offering prizes for the best results. In some cities this matter has been taken up by the city improvement clubs obtaining permission to use vacant lots, they in turn apportioning the land to different boys. The results have been gratifying in many cases. These vacant lots were turned into vegetable gardens, which were of great assistance to poor families. It seems a great deal better to have these lots made attractive in this way than to permit them to lie idle, covered with rubbish. Demonstration work is being done in the South, where they have formed a number of corn clubs for boys, and it is promising some wonderful results. With the many practical demonstrations that have been made it is evident every parent will be justified in giving this matter consideration.

The pump you have always wanted but could never before obtain



Patented June 2, 1903  
Improvements Pending

Every Pump Guaranteed  
Absolutely

## The Ideal System of Irrigation

Saves power and money; utilizes the power; converts power into results; high heads without staging; deep wells, pits and mines. Mechanical perfection; simple; easily installed; free from wear; faithful and dependable machine. Made in many sizes, 25 gallons per minute to 10,000 gallons per minute. Address

**Ideal Irrigation Rotary Pump Company**

HENRY BUILDING

SEATTLE, WASHINGTON



**B**ETTER FRUIT was original in conception and has been original in execution, and is like no other fruit growers' paper in any respect. We have published a great many special editions during the past five years on important features connected with the orchard industry. "Better Fruit" will add new features from now on.

The July edition will be a surprise number, and one which will undoubtedly be of great benefit to all fruit growers, fruit growers' associations and private shipping firms of the Northwest. Our assistant editor, Mr. C. R. Greisen, will make a special trip to some forty large cities, collecting data and various information regarding marketing problems, which will be of great value. Mr. Greisen made three trips East for "Better Fruit" during the year 1910, but this trip will be the most thorough and complete of any. Not a single horticultural paper, so far as known, has sent a special representative East.

The July edition will contain much information about marketing in different cities, which will be gathered by our assistant editor, and in addition will contain a number of interesting views of the principal markets of the larger cities, and also photographs of many of the principal fruit dealers, all of which will undoubtedly prove very interesting and very valuable to fruit growers.

◆ ◆ ◆

**T**HE Puyallup Fruit Growers' Association's genial manager, Senator W. H. Paulhamus, is in favor of reciprocity. In the interests of fruit growing, he states that eleven cents per box on peaches, thirty cents on apples, fifty cents on berries is more or less prohibitory. Canada's season is later than ours, and on account of the tariff we are unable to ship for the early Canadian market.

◆ ◆ ◆

**V**ARIETIES OF FRUIT.—On account of the popularity of the apple and the splendid profits that are being made by apple growers in the Northwest, and, for that matter, in other sections of the United States, the apple is very much in the limelight. From prices realized on other varieties of fruit it would seem that a great many sections and growers are overlooking many good bets. The prices for prunes have been such as to indicate that this will be exceedingly profitable business. Raspberries made better money for the growers last year than they have in the past. Prices for strawberries have been unusually good in all producing sections these last five years.

From the prices obtained for many other varieties of fruit it would seem that the growers would be justified in giving the matter of planting other fruit than apples serious consideration. There are many districts where pears, cherries, prunes, peaches, grapes and apricots can be grown very successfully, of unequal quality, with large yields. While it must be admitted that this is an age of specialties, and that specialists are generally successful in making extra money, still it

must be conceded that if everyone plants apples necessarily a shortage must exist in the near future on other varieties of fruit, and consequently it will not be surprising, in due course of time, to see high prices prevailing for peaches, pears, berries, grapes, prunes and cherries. There is an old saying, "Don't put all your eggs in one basket," and if a fruit grower has land where different varieties of fruit can be grown he should go in for various kinds of fruit, then should one of them prove a failure, or prices of some one kind be low, he will still come out with a good average net profit.

The opinions of prominent railroad officials are certainly entitled to consideration, because such men are big, broad-minded men who have opportunities for taking a general view of things, which an ordinary individual does not always possess. Therefore, if it seem wise, in their opinion, to encourage a general variety of farm products the matter is worthy of consideration.

In many sections of the Northwest immense crops of alfalfa can be grown, and it is also well known that the stock business of the Northwest has been very

profitable. Where alfalfa can be grown successfully and the climate is well adapted to stock raising, as it is in the Northwest, it would seem that an opportunity for this line of farming has been largely overlooked.

Some districts, for certain reasons, are especially adapted for producing some one thing as a specialty, but it does not seem wise for all districts to grow the same specialty. On the other hand, where a district is adapted to several specialties the matter is undoubtedly worth considering.

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY

**HOOD RIVER  
MILLING CO.**

# CREATION



**H**E who is blessed with the power to create is blessed with God's greatest gift to man, and if he uses that power to increase the happiness of his fellow men he becomes a benefactor to the human race.

The world owes homage to the men who have devoted their burning energies to the consummation of one purpose, to the final and most perfect development of an ideal.

## The Steinway Piano

Is an example of the grand result of years of persistent, purposeful striving after the very highest musical ideal. Sons have taken up the task where fathers left off, so that alternate generations of genius, working through the finest piano factory in the world, have evolved the **Steinway**—a piano that has long since been acknowledged the musical masterpiece of the ages.

Priced at \$575, \$625, \$775 and up to \$1,600. Of course you can buy a piano cheaper, but it will be a cheaper piano. Why not get the best?

The tone is the Jewel.  
The case is the Setting.  
The combination is the  
**Steinway—the Perfect  
Piano.**

**VICTOR TALKING  
MACHINES and  
SHEET MUSIC**

**Sherman Clay & Co.**

**SIXTH AND MORRISON  
PORTLAND, OREGON  
Exclusive Steinway Representatives**

**C**HARLES WILMEROTH has just returned from a trip through Europe, having visited England, Ireland, Scotland, Germany and several other countries, both as a pleasure trip and in the interest of the fruit business. One of his principal comments is that boxed apples nearly all arrive in a damaged condition, which would make the heart of the fruit grower sore. From him, and from others, we have learned that apple boxes are put into a sling and loaded into the hold in the steamer at this end, and put into sling and dumped on the wharf at the other end. The consequence is the fruit grower who has handled his apples like eggs, and the railroad carried them carefully to New York, has them subjected to the roughest kind of handling in being loaded on the steamer and from the steamer to the wharf. This is a phase of fruit shipping that should be corrected. Mr. Wilmeroth says that apple boxes should be made strong for export. His suggestion is meeting with approval, and it would seem that from his report on the method of handling that the cover ought to be made as thick as the sides. The editor of "Better Fruit" was the first to call for a reduction in the swell in 1903. Swell anywhere from one and one-half inch to two inches was considered necessary in packing apples, but the editor of "Better Fruit," who was manager of the Hood River Apple Growers' Union, immediately began to make investigation, and through observation and by correspondence became convinced that one-inch swell on top and bottom was all that was necessary to take care of any shrinkage, and consequently the Hood River Apple Growers' Union followed this system of endeavoring to pack every box of apples with a swell of not more than one inch, top and bottom. It would seem that from what Mr. Wilmeroth says the swell has been too great, and much bruising the result, and it looks now as if it would be necessary for all districts to allow one-inch swell, and it might be advisable to decrease the Hood River standard, from one inch on top and bottom to something less. Mr. Wilmeroth is a man of varied experience in the fruit business, having been a member of a Chicago firm several years, a resident of Wenatchee for some time and located recently in Southern Oregon, and during the year 1910 he was manager of the Southern Oregon Fruit Growers' Association, consequently his conclusions are worthy of careful consideration.

**N**URSEYRMEN'S CONVENTION. The nurserymen's conventions are of great importance to the fruit industry. Every nurseryman should attend the two conventions that are to be held this year. The National Nurserymen meet in St. Louis June 14, 15 and 16. Excursion rates can be secured on June 10 and on various other dates, which can be secured from the Oregon-Washington Railroad and Navigation Company. Every nurseryman and every fruit grower will receive in benefit several times the cost of this

trip. We presume arrangements can be made also to return via San Jose, California, to attend the Pacific Coast Nurserymen's Association, which is to be held in that city June 21, 22 and 23. However, those who cannot make both trips can make arrangements for the Pacific Coast Nurserymen's Association by writing to C. A. Tonneson, secretary, at Tacoma, Washington. We understand the rate to San Jose, California, will be \$26.40. "Better Fruit" intends to be represented at both of these meetings if possible, but the work of getting out an edition of "Better Fruit" has become so great, requiring more time every month, that sometimes we are unable to attend all the conventions we would like to. We intend to be represented at the San Jose meeting at least, if it is possible.

**T**HE Pacific Fruit Express is preparing a new system of icing for the coming year. While we have not seen the apparatus, we understand there will be a moving platform constructed along the track which will carry a load of ice, and by moving alongside the railroad track the entire train can be re-iced in a very few minutes. This shows the right disposition on the part of this company to assist the fruit grower, because the quicker the fruit reaches its destination the better it will be on arrival.

**R**ETURNS and reports of a reliable nature are not yet in from all districts. Possibly some districts will have nearly a normal crop, while others are already known to be very light. At the present writing it seems as if the estimate of sixty per cent for the Northwest in general would be a conservative figure.

**T**HE apple market has certainly been peculiar this year. Barrel apples commanded very strong prices the early part of the season. At the present time the demand for barrel apples is weakening very rapidly, while the demand for boxed apples is very strong.

#### THE APPLE TREE STORY

**P**ARAGRAPHS have recently been appearing in newspapers that a young apple tree is to be planted to replace the old apple tree under which Lee surrendered to Grant at Appomattox. This apple-tree legend survives the years and all attacks upon it. It is such a pleasing legend, blending poetry and tragedy, botany and arms, that people persist in believing it. These fruit-tree legends—the Grant apple tree and the George Washington cherry tree—are a great deal harder than the fruit trees themselves, and live to a riper age. The apple-tree story has very little fact to sustain it. Lee did not surrender under an apple tree, but in the parlor, on the right of the entrance of the house of Wilmer McLean, which set back in a big garden on the main street of the village of Appomattox, about one square from the courthouse. General Lee and his mili-

tary secretary, Colonel Charles Marshall, entered the McLean house at 1:30 o'clock in the afternoon of April 9, 1865. General Grant was already there, accompanied by Generals Sheridan, Ord, Ingalls, Rawlins, Seth Williams, John G. Barnard, and Colonels Horace Porter, Orville E. Babcock, Ely S. Parker, Theodore S. Bowers, Frederick T. Dent and Adam Badeau. The articles of surrender were agreed to, written and signed, the conference was concluded at 4 o'clock, and at 4:30 o'clock Grant sent the dispatch to Secretary Stanton announcing the surrender of the Army of Northern Virginia.

An apple tree and an apple orchard figure in the events leading up to the surrender, and it may take some of the bloom off the story to announce that April, 1865, was a backward month, and that at the time of the surrender there was not a leaf or a blossom on any trees around Appomattox Courthouse. The old orchard long ago disappeared, and the village of Appomattox has very nearly disappeared. The courthouse was burned down something over fifteen years ago and a new one was built at Appomattox Station, on the Norfolk and Western Railroad, three miles southwest of the surrender village. Nevertheless the Appomattox apple-tree story blooms perennially.—Washington Star.

### J. F. LITTOOY

#### CONSULTING HORTICULTURIST

Orchard director, orchard schemes examined, orchard plans submitted, orchard soils and sites selected, nurseries visited and stock selected, values examined for farm loans, purchasing agent for land and orchard investments, acts as power of attorney in selection of Carey Act lands.

MOUNTAIN HOME, IDAHO

## A Safe Investment

If you are interested in securing a home, or site for a home, in a city where you can spend the declining years of your life in peace and happiness, or if you have money to invest in a city of schools, churches, parks and improvements, where the great railroads of the country have centered and an unequaled harbor offers shelter to the shipping of the world, Seattle gives you an opportunity where steadily increasing values will bring the best results.

We have lots and homes in all parts of the city, ranging in price from \$300 up to \$25,000, as well as farms near the city, which we will sell on easy terms or exchange for farms in any part of the United States. Tell us what you want or have to exchange.

HAZEN CHASE, JR. & CO.

309 American Bank Building, Seattle, Washington

## Oranges Grow in Texas

The Gulf Coast Citrus Fruit Grower and Southern Nurseryman tells you where. A high-class monthly fruit journal, full of citrus news of a dependable character, illustrated from photographs of growing orchards. Subscription price ONE DOLLAR A YEAR. Sample copy mailed for a dime.

ALBERT S. LEECRAFT, Publisher  
P. O. Box 564, Houston, Texas

### DO YOU WANT TO KNOW ABOUT TEXAS?

CITRUS FRUIT GROWER—a high-grade dependable fruit journal—gives unbiased opinions on fruit and truck growing in the Gulf Coast country. Illustrated from actual photographs. NO LAND TO SELL. Three months' trial subscription 25 cents.

ALBERT S. LEECRAFT, Publisher  
Box 564, Houston, Texas.

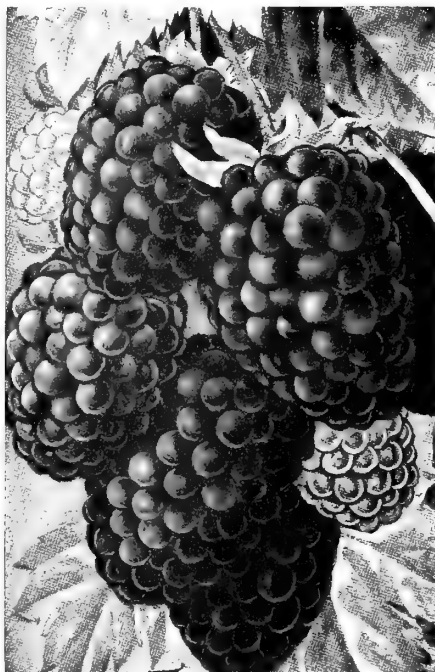
## NURSERYMEN'S ASSOCIATION ANNUAL CONVENTION

**T**HE time for the coming together of our membership—June 14, 15 and 16, 1911—is near at hand, and, with echoes of the splendidly successful Denver convention still fresh in our memory, we are called upon to announce the thirty-sixth annual gathering of our association. When we review the record of achievements by this organization, each one of which has secured large benefits to the trade generally, we are surprised that there are so many nurserymen in every state of the Union who are still unidentified with the association. Surely they do not fully appreciate what a membership with us means. It is no small privilege members enjoy in being able to annually touch elbows with their brethren from far and near, and to listen to valuable papers and discussions on topics of vital importance to each. Whilst certain portions of the time are thus occupied the management, fully believing in the old adage that "All work and no play makes Jack a dull boy," caters also to the social and recreative, and a reference to the program prepared by the entertainment committee will furnish an idea of their plans.

"In union there is strength" may be an "old saw," but it is none the less true, and we repeat what we said in last year's circular: "We are satisfied that there are many nurserymen still to be secured as members, and as a result a corresponding increase in interest and in influence to be developed." Nurserymen, we ask that each resolve to give immediate response. You can if you will. And your doing so will greatly facilitate the work of your secretary in the registration of members and in the compilation

and prompt publication of the badge book.

St. Louis, the convention city for 1911, has an altitude of 480 feet above sea level. It is built on rolling ground, rising at some points 200 feet above the



LOGANBERRIES

level of the Mississippi River, and possesses a frontage of nineteen miles on the "Father of Waters." Beyond the third terrace the surface spreads out in a picturesque plateau. The climate is temperate and healthful. The city is noted for the number and beauty of its public parks, which have an aggregate area of 3,200 acres, prominent among which are the Tower Grove Park and the famous Missouri Botanical Gardens. In its public buildings St. Louis has much to be proud of. It boasts of a \$2,000,000 city hall, a \$6,000,000 U. S. government building and a chamber of commerce building of sandstone in the Renaissance style. It has over 400 miles of streets, and its wide avenues and palatial residences are very attractive. The great bridge over the Mississippi is a marvel of engineering skill.

The selection of The Southern Hotel as headquarters was made after much consideration by the committee, including the president of the association, the latter saying of it, "The ideal place for the nurserymen." The management of the hotel say: "The Southern covers an entire city block; is thoroughly fireproof; has about 400 large rooms, every one with an outside exposure, about 150 of them with private bath. Our hotel lobby, the largest of any in the world, in the form of a Maltese cross, has an entrance from each of the four streets by which it is bounded. The Market Street car will bring you from Union Station direct to our doors. We are prepared to make you very liberal terms—the free use of such meeting and committee rooms as you may require,

together with service, and a rate on the European plan of one dollar per day per person where two occupy the same room with one double bed; single rooms from \$1.50 per day up. Our \$1.50 and \$2 rooms to be one dollar additional where bed is furnished for each additional person; room with private bath from \$2.50 per day up, single, and from \$4 per day up for two people. American plan rates from \$3 per day up." The Southern Hotel people promise that they "will not refuse any reservation as long as vacant rooms are at our disposal, and will use every effort to see that your members are satisfactorily cared for." Our advice to all is that they write immediately to Henry C. Lewis, manager, The Southern Hotel, St. Louis, Missouri.

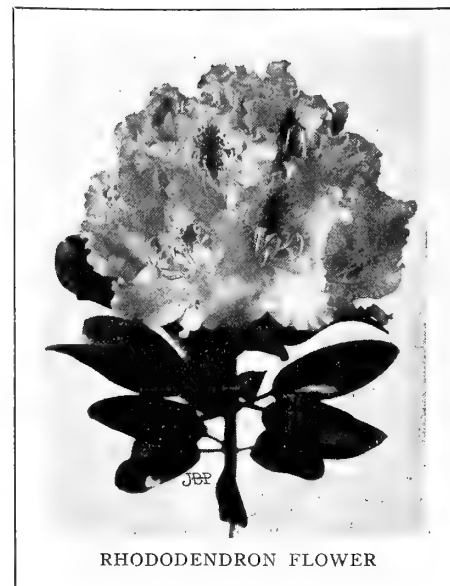
To join the American Association of Nurserymen costs five dollars. Send that amount to the secretary the day you read this notice. We ask your co-operation. You have everything to gain and nothing to lose by joining, while the association as a whole will be materially strengthened thereby.

In answer to the query, "What is the badge book?" we reply, "an unique list of the live nurserymen of the country." Not that all the live members of the trade are enrolled. Your name should be therein, if not there already. Every member is given a number immediately his fee is received by the secretary, and the membership fee entitles you to publication of name and address only. If a member be alive to his privilege he will buy a space in the book for his advertisement, thereby attracting to himself the attention of every other member, for his badge contains his registration number, which he will attach to his coat, and thus introduce himself to all who meet him at the convention. You cannot afford to be off the list of advertisers. Primarily, for your own good, and, next, because this is a grand co-operative concern, and deserves the support of all to enable it to successfully prosecute its work.

For information regarding exhibits application should be made without delay to Mr. J. W. Schuette, 5600 Gra-



EVERGREEN BLACKBERRY



RHODODENDRON FLOWER



QUEEN OF THE MARKET RED RASPBERRY

"Shaw Banquet" for members and a boat ride for all on the beautiful and majestic Mississippi River, with music and refreshments. Badge book will contain the program in detail.

The committee on program has decided to hold half-day sessions only for business, and it is their belief that if members will respond promptly and heartily to this arrangement the sessions can be made intensely interesting and exceedingly profitable. Chairman J. H. Dayton's desire has been to arrange for a program in which every member present will take part, recognizing the fact that free discussion, following a few short papers on practical subjects by practical men, will produce a fund of information that will make the annual report one of exceptional value. Besides the usual introductory numbers, several committees appointed by President Stark have had to deal with very live topics, and their reports will doubtless create much discussion. Then S. J. Hunter, state entomologist of Kansas, will speak on "Nurserymen and Entomologists;" Dr. J. C. Whitten, professor of horticulture in the University of Missouri, will talk

vois Avenue, St. Louis, Missouri, chairman of committee on exhibits. Intending exhibitors should write him now.

No special railroad rates will be authorized for members attending the convention. The guarantee required is prohibitive as far as this association is concerned. We therefore advise each member to consult with the local ticket agent in his locality regarding routes and rates. The sooner the better. A "special party rate" may be obtained in cases where ten or more can gather at some central point, the conditions being that the same route be used both going and returning, all traveling on one and the same ticket.

Mr. Frank Weber, chairman of the entertainment committee, advises us that the program, as outlined up to the present, includes a visit to Missouri Botanical Gardens, automobile ride through the residence sections, the parks and the main business sections of the city; "special car" trip for ladies only to a popular summer garden theater;

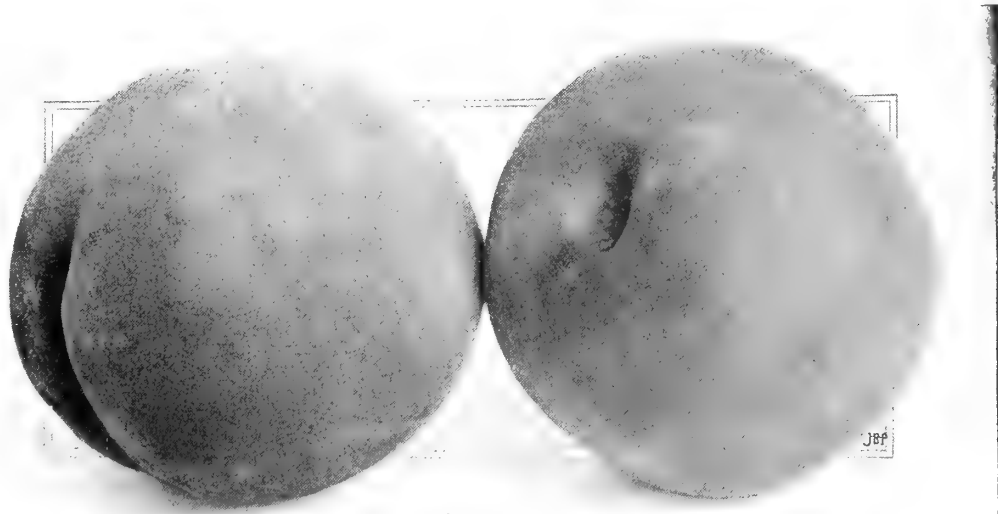
on "Spring versus Fall Planting of Fruit Trees." The professor has been conducting experiments along this line for a number of years.

The balance of the time will be taken up with the discussion of such questions as "Ethics of Our Business," "How to Extend Our Markets at Wholesale and Retail," "Standardization of Prices at Retail and Wholesale," "Standardization of Grades," "Mailing Lists—Should They Be Classified?" "Who Are Entitled to Trade Lists?" "How Best Kept Up to Date," "Should Large Buyers Not in

the Trade, Such as Parks, Cemeteries, Public Institutions, etc., Be Given Trade Prices." These questions will be opened by short papers or talks by such practical men as Harlan P. Kelsey, J. M. Pitkin, F. H. Stannard, Abner Hoopes, T. J. Smith, W. H. Maloney, C. J. Maloy, E. W. Kirkpatrick, H. C. Chase, E. S. Welch, Wm. Pitkin, T. B. Meehan and others. Every member should go prepared to participate in the discussions.

♦ ♦ ♦  
EATING AN APPLE.—"Do you know what you are eating?" said the doctor to the girl. "An apple, of course." "You are eating," said the doctor, "albumen, sugar, gum, malic acid, gallic acid, fiber, water and phosphorus." "I hope those things are good. They sound alarming." "Nothing could be better. You ate, I observed, rather too much meat at dinner. The malic acid of apples neutralizes the excess of chalky matter caused by too much meat, and thereby helps to keep you young. Apples are good for your complexion. Their acids drive out the noxious matters which cause skin eruptions. They are good for your brain, which those same noxious matters, if retained, render sluggish. Moreover, the acids of the apple diminish the acidity of the stomach that comes with some forms of indigestion. The phosphorus, of which apples contain a larger percentage than any other fruit or vegetable, renews the essential nervous matter of the brain and spinal column. Oh, the ancients were not wrong when they esteemed the apple the food of the gods—the magic renewer of youth to which the gods resorted when they felt themselves growing old and feeble. I think I'll have an apple," concluded the doctor.—New York Tribune.

♦ ♦ ♦  
CONSTRUCTION work on the irrigation system of the Willamette Valley Irrigated Land Company at West Stayton, Oregon, is progressing rapidly, the weather having been unusually favorable for outdoor work. From seventy-five to eighty men and thirty to thirty-five teams have been at work daily, and it is expected that water will be turned into the canal this month.



ELBERTA PEACHES



## THE EFFICIENT MANAGEMENT OF OUR RAILROADS

EXTRACTS FROM ADDRESS BY HOWARD ELLIOTT, PRESIDENT NORTHERN PACIFIC

**N**OW, when the question of the railways of the country and their rights and requirements are so prominently before the public, there is one point on which it is possible for both the public and the railway management to agree; that is, that the railways must either earn or borrow the money which it is necessary to procure to meet the expense of improving old lines and the cost of new lines, and furnishing better trains and better service, which are not only demanded by the public, but are a necessity if the railways are to keep abreast of the normal growth of the country. Suggestions have been made based on theories and methods yet in an experimental stage, and, therefore, unproven, among which none has claimed more space in newspapers and magazines than the assertion that American railroads can save \$300,000,000 a year—a million a day—by what is termed “scientific management.”

It is unfortunate that at a time when all railroads are face to face with the problem of stemming a rising tide of expense and all the serious business con-

sequences this situation entails, they should be compelled to submit to so bald and blunt a criticism of the efficiency of their management. So widely has public attention been caught by this radical statement that it has seemed desirable that the public be told what it amounts to as a business proposition. Railroad officers are spared this task, however, because the Interstate Commission has discussed it tersely and effectively in a recent opinion about the advance of freight rates. The commission declares that no part of the advanced cost of railroad operation could be made good by “scientific management,” as advocated by a witness in this case, and repudiates the theory in the following language:

“It was, however, earnestly insisted by the shippers that the railroads might and should find other kinds of economies with which to make good this increase in wages. Several prominent manufacturers testified that in their business in recent years wages had been advanced, but that they had not been able to make corresponding advances in the price of their product, and were, therefore, forced to

look about for other ways in which to take up the increase in the cost of production.

“It was claimed that by the introduction of what was termed ‘scientific management,’ the purpose of which was in various ways to make labor more efficient, at the same time increasing the wage paid the laborer himself, much more than the amount of these advances could be saved. One gentleman who described these methods testified that they had been introduced to some extent into the operations of railways with remarkable results, and that from a careful analysis and computation he was satisfied that not less than \$300,000,000 annually could be saved by the proper application of these methods to the business of railroading in the United States.

“It is difficult to see exactly what application the commission can make in this case of this testimony. The witness, who apparently had most to do with the originating and applying of these methods, testified that they were in actual operation in not over one-tenth of one per cent of all the manufacturing establishments of this country. The system is everywhere in an experimental stage. To some extent it has been tried

and is now being tried by our railways. The representative of railway labor who appeared before us stated that these methods could not and should not be introduced into railway work. Upon this record we can hardly find that these methods could be introduced into railroad operations to any considerable extent, much less can we determine the definite amount of saving which could be made. We cannot, therefore, find that these defendants could make good any part of these actual advances in wages by the introduction of ‘scientific management.’”

There is no necessity for comment upon so thorough and decisive a decision that this theory of railroad management is visionary and impractical. It might well be said of our railroads, that without dressing their methods in imposing terms and giving their ordinary practice an undue and fictitious importance, they have for years been exceptionally active in ferreting out and applying all new ideas that promised better efficiency. All business has been seeking to find the best and most economical methods.



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
BEAUTIFUL DISH OF VIRGINIAS BERRIES



For many years our railroads and our leading American manufacturers have been applying "scientific management" to their business, and when new methods have been proven to possess real merit, have been quick to adopt them. "Scientific management," as it is now being discussed in the magazines and newspaper press, would have more weight with railroad officers and business men if it were something new, and something more than the theory of one who during all his business life has been a lawyer. It would be more valuable as a suggestion if it did not consist of ideas which have been discussed many times before by practical men, and from which all that is good has been already well sifted and applied to actual business.

In the decision which embodied the opinion of the Commerce Commission upon "scientific management" there also occur several illuminating statements about the importance of railroads to business in this country, which, from such a source, are of great significance. The commission says: "Next to agriculture, our railroads are our greatest single industry. In their ordinary operation and maintenance great numbers of laborers and vast quantities of supplies are used. Railroad extension would mean the employment of additional labor and the purchase of additional material and equipment. \* \* \* So far as such expenditures are legitimate they ought to be encouraged. Our railroads should be kept in a high state of efficiency, and railroad charges should be sufficient to permit this. Necessary extensions and improvements should be made, and the treatment of the railroads by the public should be such as will inspire that confidence on the part of the investing public necessary to obtain funds for such additions."

An important phase of the railroad question, that involved in the fact that to meet the demands of the public for the best local facilities, the best trains and the best service, the railroad must frequently make investments which in the nature of things can never become



Copyright 1910 by R. M. Kellogg Company, Three Rivers, Michigan  
FIELD OF THOROUGHbred PEDIGREE STRAWBERRY PLANTS GROWN BY MRS. WILL OLIVER  
MONONA, IOWA

revenue-producing, is touched upon by the commission in this language:

"In the development of a railroad it must often invest money in permanent structures like a passenger station, which will not add, for the time being, to its revenues. \* \* \* It is reasonable to say that such rates may be charged as will permit the accumulation of a fund to take care of cases of this sort." Again: "The economies just referred to, like the reduction of grades and use of larger equipment, have necessitated large outlays of capital, and upon this an additional return must be earned. Taxes have increased, and are increasing more rapidly than the value of the property. All these influences tend strongly toward higher freight rates, for they not only add to the cost of operation, but they increase the cost of the plant, upon which a return must be made. \* \* \* The demands of the public will continue to add to both the expense of operation and the cost of the plant. Greater safety of operation will be insisted upon, and will require the outlay of considerable sums of money upon way and structures, and also extensive changes in equipment, and will still further add to the cost of operation itself by requiring the employment of additional men and the use of the men under different conditions. It was said by the railway representatives that this increase in expense can no longer be offset by the introduction of further economies in the future, as in the past, and it seems probable that (in the future) the same kind of economies cannot be relied upon to the same extent."

I infer from this that the commission believes the railroads cannot go much farther in employing more efficient methods to offset increased expense. Yet in spite of increasing taxes, higher wages to employees and added expense in every other direction, no small item of which

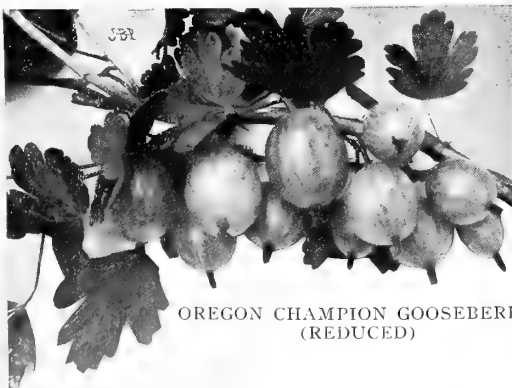
is the expense of meeting the requirements of board and commission control, which now amounts to about \$20,000,000 a year, new laws are constantly being proposed by our state legislatures which impose new restrictions on the railways. These are added to the existing law and continually increase the burden upon the transportation business of the country, while but few enactments are repealed.

In the seven states in which the Northern Pacific Railway operates its lines there were submitted to the legislatures which are now adjourning more than 225 bills for laws, most of which are admittedly experimental, or founded upon ideas which have not been proven to be sound. Such legislation cannot conform to the demands of sound, conservative business judgment, and such judgment is essential in the management or control of as great a business as that of our railroads, which is only exceeded in bulk and in importance in the United States by that of agriculture. Has the time not now come for an impartial and serious consideration by the people at large as to whether it might not be better for their interests individually and collectively and for all business interests of the country to give the railroads a breathing spell, to eliminate much of the useless and unnecessary restrictive law under which they are compelled to work, and permit them to solve the very serious problem of giving the public what it wants in railroad service and railroad facilities, by encouraging friendly relations and friendly discussion with the public, rather than to have constant friction and bickering?

• • •

Editor Better Fruit:

I enclose check for three dollars to pay my subscription to 1913. I value "Better Fruit" more than any other publication I subscribe for. E. H. Swanson, Omaha, Nebraska.



OREGON CHAMPION GOOSEBERRY  
(REDUCED)

# WE WANT TO TALK BUSINESS

WITH EVERY SHIPPER OF

# APPLES PEACHES PEARS

IN

California, Oregon, Washington, Idaho, Colorado, Utah, Nevada

WRITE US TO-DAY, stating varieties, quantity and probable quality of fruit you expect to ship. Look up our standing; ask "Better Fruit" or your bank

**ROBT. T. COCHRAN & CO.** 290 Washington Street  
NEW YORK

For several years we have been supplying most of the nursery stock planted in the famous Wenatchee district. Our business has grown to one of the largest in the Northwest and we have gained a reputation of which we are proud.

Experience has taught us how to grow the **Cleanest, Healthiest, Best-Rooted Trees in the World.**

Our line is large and complete. Over two million trees sold last year. Our customers get what they order.

Send in your list, whether large or small.

**COLUMBIA AND OKANOGAN NURSERY COMPANY**

Wholesale and Retail

Wenatchee, Washington

## Situation Wanted

By responsible young man with good education and several years' experience in horticulture; also a good knowledge of bookkeeping and business methods.

Address M. H., care "Better Fruit."

## FOR SALE

Twenty acres near Roseburg; thirteen acres full bearing apples, pears and peaches; new bungalow; on county road, right at Brockway; good school, church, public library. Price \$6,000; terms to suit. Owner for full description.

**UMPQUA HEIGHTS ORCHARD**  
Brockway, Oregon

## Would You Like the Fruit Growers' Profits?

We are developing two large commercial orchards in the Willamette Valley, Oregon, and can use to good advantage a little more capital in expanding the business. A small amount invested will bring the same proportionate returns as a large sum. We are well established and thoroughly understand the business. Fullest opportunity will be given intending investors to investigate the propositions as well as us. We employ only scientific orchardists who are well known in the fruit-growing world. For complete information address C. B., care "Better Fruit."

## Editor Better Fruit:

Enclosed you will find postal order for one dollar for renewal of my subscription for your valuable paper. I must say that of all fruit papers and magazines I take I appreciate none as much as yours, especially the February number, which is considered in Nova Scotia to be the best thing ever gotten out. You will remember the writer was talking to you at the Niagara fruit meeting last August about a copy you published something like a year ago on fertilization of blossoms, showing varieties that were self-fertilizing and other varieties which are sterile. If you could send me a copy of that number I would be very thankful to you for it. Yours truly, C. O. Allen, Kentville, Nova Scotia.

**T**WO excellent Blue Ridge fruit farms in the Shenandoah Valley of Virginia, containing 150 and 200 acres, respectively. First has about 1,000 peach and apple trees, 4 years old; 30 acres additional cleared for planting; small house; price \$2,400. Second has small bearing apple orchard and about 70 acres ready to plant; good house and barn; price \$4,850. Both well watered and fenced; titles perfect; easy terms; low freight rates. Address William Campbell, Charles-Town, West Virginia.

**W**ANTED—To lease or take care of a good bearing orchard, by a competent man; understands thoroughly spraying, cultivation, packing, and caring for the orchard throughout the entire season. Address A. H., care "Better Fruit."

**"The Edgemont Lid Press"** FOR SEASON OF 1911  
with New Improvements

Write H. PLATT & SONS, Como, Montana

# SPECIALIZATION IN THE FRUIT GROWING INDUSTRY

BY DR. PAUL L. VOGT, PROFESSOR OF ECONOMICS AND HISTORY, W. S. C.

ONE of the most marked tendencies in the fruit growing industry of the Northwest is that of specialization. This tendency shows itself not only in the planting and growth of particular types of fruit, but also in methods of preparing fruit for market and in methods of disposal of crops. Occasionally one will find the old-fashioned orchard in which the owner has planted two or three trees of every variety known to the nurseryman, and from which the owner secures a small quantity of fruit suited to each season of the year. In times past this type of orchard was perhaps best suited to the needs of the community. The aim of the grower was to raise as much of every commodity as he needed for himself, thus making it less necessary to purchase food supplies from others. But those who are going into fruit growing as a business recognize that it is impossible to make the orchard planted for home use succeed as a commercial enterprise. When he raises fruit to sell he considers the wants of others and plants his fruit to meet those wants instead of his own.

Specialization is meeting with favor not only because of the conspicuous success of those who have specialized, but also because it is only through the adoption of this policy that failure can be avoided. In many places one finds fruit going to waste that would demand a market price were it raised under conditions that would enable the owner to bring it to the consumer. But the quantity of any one variety raised is too small or the quality resulting from too little care is so inferior that the owner does not feel justified in attempting to dispose of it. On the other hand, one finds in other communities the same commodities becoming the basis of large fortunes. The secret of difference is specialization.

Two instances of the results of specialization may be cited out of the many to be found in the fruit growing sections of the Northwest. The one is in the growth and disposal of a durable fruit, the other in the handling of a fruit of the most perishable nature. Hood River, Oregon, has become world famous for the apples produced in the Hood River Valley, and in like manner the Puyallup Valley, in Washington, has become widely known as a producer of berries. In each case specialization is carried to the utmost limit. At Hood River, according to a report by the Oregon Agricultural College Experiment Station, 1908, the total number of apple trees one to twenty-five years of age was 349,435. Of this total 174,684 trees were Yellow Newtown Pippins and 150,616 were Spitzenbergs. Thus over ninety-three per cent of all the trees planted were of these two varieties. Those acquainted with later planting state that the same relative proportion is being maintained. In the Puyallup Valley the Puyallup-Sumner Fruit Growers' Association, which handles an estimated amount of seventy-five per cent of all

the fruit grown in the valley, handled during the year 1909 a total of 901,271 pounds of fruit in their cannery and 73,473 packages (crates, boxes, baskets) of fresh fruit. Of the cannery goods 724,695 pounds, or over eighty per cent, were made up of blackberries and raspberries, and of the packages of fresh fruit 69,702, or ninety-five per cent, belonged to these two varieties of fruit. The odds and ends that make up the other five per cent are too unimportant to be worth consideration. It is important to notice that a much larger proportion of other varieties are handled in the cannery. This is an indication that the cannery helps to solve, in a measure, the problems resulting from non-specialization, such as exists in the valley.

The other fruit growing sections of the state do not as yet show the degree of specialization found in the places mentioned above, but the same tendency toward greater specialization on varieties of fruit that have been found specially adapted to the respective districts is apparent.

The economic causes for this specialization are to be found, in part, in the advantage it gives in the disposal of the product. When the grower has a few boxes each of a great variety of apples he must sell them at prices representing the general demand for apples, quality not considered. Neither the grower nor the wholesale dealer can profitably pick out any one variety and attempt to create a special demand for it. But when many varieties are replaced by a few best suited to existing conditions then the dealer who is prepared to handle large quantities of staple articles is interested. The dealer who would not waste postage on a few boxes of first grade

apples scattered among a number of growers will send his agents to bid for the same apples when the growers get enough together to enable the dealer to handle them in carload lots.

Fruit raised in small quantities must also seek a market in the nearby towns whose consuming capacity is limited, but when carload lots are produced then rate advantages may be secured from the railroads that enable them to seek markets large enough to consume the entire supply at good prices. Success in fruit growing appears to demand production on a scale in the community large enough to insure economical handling and transportation facilities sufficient to enable the grower to reach the large markets.

Specialization also shows conspicuous results in the profits rightly enjoyed by those living in a section which has earned a reputation for a high standard of product. When the big red apple, the Yellow Newtown or the Spitzenberg, becomes famous the country over those who can invest in luxuries are willing to pay high prices for the special product, and those who do not buy often, but who want good fruit when they do buy, will select those varieties which have a standard reputation. "Just apples" bring only moderate prices, but apples which are the result of specialization bring large returns.

The successes of the fruit growers of the Northwest may be said to be due to specialization. Specialization in varieties raised, in cultivation, in preparation for market, in advertising and disposing of products have resulted in making the Northwest of prime importance in fruit production. The future will probably see still greater specialization than the past or the present.

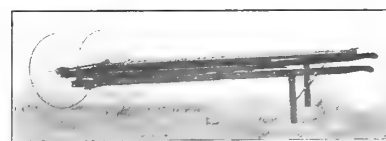
## The Orchard Ladder and Manufacturing Co.

Phone, Columbia 255. McDonald Block, ST. JOHNS, OREGON



SET UP

At last a long felt want ladder has been supplied in Swengel's patented portable ladder. This ladder is so complete in every detail that it fills the bill for every possible want in the way of a ladder for orchardists. One man with this ladder can gather as much fruit from the top of the tree as three men usually gather with average type of a ladder. One illustration shows the ladder folded up. The large illustration shows the ladder set up with an extended elevated platform projecting into the tree. Upon this platform fruit can be picked directly into the boxes, reducing the possibility of bruising the fruit to a minimum. The ladder is substantially built and rests so firmly on the ground that any child can pick from this ladder with perfect ease and safety. This ladder can be used for thinning apples as well as picking.



FOLDED

MANUFACTURERS  
OF

## Swengel's Portable Orchard Ladder

## AMERICAN AND CANADIAN EXPORTS DECREASING

REFERRING to the season's shipment of apples and some facts worth remembering, a letter from W. N. White & Co., fruits and general produce, says:

"This week will about wind up the exports of apples to Europe, and the following facts and figures may be interesting and instructive:

	Season 1910-11	Season 1909-10
Port of New York .....	326,219	398,944
Port of Boston .....	440,926	263,626
Port of Portland .....	72,807	248,020
Port of Montreal .....	169,940	587,287
Ports of Halifax and Annapolis	204,254	676,424
Port of St. John .....	5,055	43,356
Boxes of Far Western .....	1,070,500	463,362

"The early spring and late frost destroyed large portions of the crop east of the Rockies and many parts of Colorado. New York kept her supplies up to the average through drawing large lots from the Virginias, where they have gone into extensive planting during the past decade. It will be seen that Boston and Portland combined are about equal for the two seasons. From my own personal observation Massachusetts and Connecticut, that was for many years a 'by word' among the fruit from other states, will in the future have to be reckoned with. Growers there are taking more pains with their orchards, until today the quality is equal to some of the best in New York state.

"Attention is called to the falling off from Montreal, Halifax and St. John of over 800,000 barrels. Last year's warm March, followed with bad weather in May, accounts for this. Otherwise, Nova Scotia alone, with her increasing acreage, expected 1,000,000 barrels. This year things are reversed. They still have cold

weather, and their season is fully four weeks later than last. It is said their trees are looking well, and, having had light crops last year, Canadian ports are expected to ship this year 2,000,000 barrels, or 700,000 more than two years ago.

"Further attention is called to the remarkable increase in far Western boxes, the largest in any previous season exported being 520,000 boxes. This industry started in 1885, and my firm sold the first car that ever was shipped to England. The total growth this year has been reckoned about 15,000,000. Each box when sent to New York pays the railway fifty cents freight. At the present time everything West looks well for good crops. Colorado, that only had 2,500 carloads last season, has already come out with the statement that they expect 10,000 this season. This would mean 8,000 carloads of apples (6,000,000 boxes). The immense tracts laid out in Idaho, Utah, Oregon and Washington during the past ten years, which are now coming into bearing, looks like 28,000,000 to 30,000,000 boxes next season, and it remains to be seen if these quantities will be able to stand the present railway charge.

"All barrels of apples have sold at good prices, but boxes have sold at lower prices than they have in their history, particularly those grown under irrigation. Some of these have arrived in Europe in bad condition, proving that fruit grown under irrigation has poor carrying quality—too much water in the fruit, and as the American government is expending some \$25,000,000 on irrigation, this season's lessons may be of some value."

## THE NATIONAL APPLE CONTEST NEXT NOVEMBER

APPLE GROWERS of America are to have an opportunity for competing for a prize of \$500 in gold at the great New York land show to be held in Madison Square Garden in November.

The prize of twenty-five twenty-dollar gold pieces is offered by Howard Elliott, president of the Northern Pacific, for the best exhibit of twenty-five boxes apples of any variety or varieties made at the American Land and Irrigation Exposition next fall. Competition for this prize is open to the growers of the world, and the exhibitors must be prepared to furnish affidavits as to the crop from which the samples exhibited were taken. The exact terms of award have not yet been decided upon. Gilbert McClurg, general manager of the exposition, and Mr. Elliott, are now in correspondence with pomologists and horticulturists upon this subject, and the decision as to the points of merit probably will be made public early in the summer. Growers can secure full information regarding this apple contest from the American Land and Irrigation Exposition, 149 Broadway, New York City.

The donor of this prize, President Elliott of the Northern Pacific, is also to give away 160 acres of Montana wheat land by popular allotment during the

exposition. Several valuable tracts of land will be given away in this manner, and it is expected that this feature will draw many visitors to the exposition from the surrounding territory.

This first New York land exposition is to be thoroughly representative of American agriculture as well as the most picturesque and instructive call of the land ever presented in the nation. Exhibitors will display their soil and its products, or show maps and relief models of their holdings. Agriculture as it is generally practiced, dry farming and irrigation methods will be demonstrated. Moving pictures, illustrated lectures, literature, growers and agents will demonstrate the possibilities of American soils. In fact the exposition will perfectly illustrate that from the land comes all permanent wealth, and that life on the land affords the greatest measure of independence.

♦ ♦ ♦

Editor Better Fruit:

I have received your sample copy of the small fruits edition of "Better Fruit," March number, and will say that anyone who can get up a publication of this sort for one dollar a year ought to be encouraged by every grower of fruits in the United States, therefore I enclose you herewith check on West Side Bank, New York, for one dollar to pay for "Better Fruit" for one year, commencing with the May issue. Kindly send me proper receipt for same and oblige. Yours truly, L. G. Loomis, Victor, New York.

THE NORTHWESTERN FRUIT EXCHANGE illustrates its policy of maintaining a thoroughly efficient administrative organization in the selection of Charles A. Malboeuf for the office of secretary. Mr. Malboeuf has been long and intimately connected with the progress of the Pacific Northwest, and is a traffic and publicity man of very extensive experience. Born in Montreal, Canada, where he was educated in the Dominion government schools, he came to Portland in the early nineties, and for fourteen years was with the Southern Pacific Company in that city and in the field, rising rapidly through the various traffic branches to the office of district freight agent for the lines in Oregon, which he held until January, 1910, leaving the railroad service with an enviable record for energetic, intelligent results. He was also previously connected with the Burlington, Union Pacific and Northern Pacific Express Companies, and as a transportation man is one of the most widely and favorably known in the Pacific Northwest. His work as publicity manager of the Medford Commercial Club was particularly effective. Mr. Malboeuf has for years been a close student of the fruit growing industry in Oregon, Washington and Idaho, and has contributed many articles of value to the Pacific Coast press and magazines on the subject. His experience and keen observation, together with his knowledge of the present and future necessities of the fruit situation, from both the view point of the transportation and community interests, specially fit him for the important office and its responsible duties, which he now holds with the Exchange.

♦ ♦ ♦

SURELY this is one of the most practical propositions yet for sawing large logs—a portable gasoline drag saw mounted on iron-shod skids, capable of sawing twenty to thirty cords of wood per day at a cost of 40 cents for distillate. Further particulars can be had by dropping a card to the manufacturers, the Reiersen Machinery Company, Portland, Oregon.

### Car Lots Our Specialty

**John B. Cancelmo**

127 DOCK STREET  
PHILADELPHIA

### FANCY BOX APPLES

### Butte Potato and Produce Co.

Jobbers of All  
Farm and Orchard Products

We have a large outlet for fruits and vegetables. We want to hear from shippers.

**A. J. KNIEVES**  
President and Manager

Sixteen years' experience on the  
Butte market.

### D. McDONALD

Hood River, Oregon

Headquarters for

FARMING AND ORCHARD

## TOOLS

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best





The most useful article you can have about your place. Stop the leaks in boats, canoes, water tanks, tubs, pails, eaves troughs, roofs, water pipes, watering troughs, irrigation sluice ways, etc. Easily applied, sets in a few moments, anchors itself firmly to wood or metal surfaces. Does not taint or discolor water. Ideal for coating inside of cement or wood silos. Just the thing for grafting trees. Has hundreds of uses. Pints 50 cents, quarts \$1.00. Write for free booklet. Agents wanted. Send 30 cents for a sample can and give Petro a trial. Money back if not satisfied.

PETRO MANUFACTURING CO.  
317 Main St., Rockford, Illinois.

**FARMER NEGLECTS FINANCIAL SIDE.**—"The financial side of farming, the world's greatest industry, is almost entirely neglected by both the farmer and the schools," says Dean J. A. Bexell of the Oregon Agricultural College, author of a volume on "Farm Accounting and Business Methods," now in its sixth thousand. "Professor Bailey, of New York, said, in discussing the matter of his own state: 'In visiting practically every farm in one of the counties of the state we did not find one man who knew how much it cost him to produce milk or to raise any of his crops.' The Secretary of Agriculture, in recent Year Books, points out the remarkable prosperity of the farmer; that the export of farm products is vastly in excess of all exports combined; that a million agricultural debtors have been transformed during the last ten years into the same number of surplus depositors; that 'contrary to his reputation, the farmer is a great organizer, and he has achieved remarkable and enormous successes in many lines of economic co-operation in which the people of other occupations have either made no beginning or have nearly, if not completely, failed.' He points out that most farmers live better than the average merchant or mechanic. It is doubtless true that the farmer is becoming a factor to be reckoned with in the business world; that the average farmer knows vastly more about scientific farming than his father did. He understands more thoroughly the value of proper cultivation, of fertilization, of rotation of crops and of diversified farming. But it cannot be said that he owes his success to improved business methods. He has been successful rather in spite of his ignorance in this respect, and because of the lavish generosity of mother nature." The college is now giving courses in farm business management by mail for the benefit of those who cannot attend the courses at the college. Some fifty have already completed the course.

A special rate of a fare and a third has been made by the railroads for the summer session students at Oregon Agricultural College this year.

Editor Better Fruit:

Your last number of "Better Fruit" was a beautiful production. You deserve every success. Ralph S. Eaton, Kentville, Canada.

## MEN WANTED

To sell our British Columbia grown (non-irrigated) Nursery Stock. Liberal commission. Pay weekly. Write, with full particulars as to experience and references.

Fraser Valley Nurseries, Limited  
Aldergrove, British Columbia

## True-to-Name Nursery

Offers for fall 1910 a complete line of nursery stock, including all the leading commercial varieties adapted to the Northwest. Our trees are all grown on the best whole roots and all buds and scions used are selected from bearing and tested trees, which insures not only early bearing, but trees true to name.

Write us for prices before placing your order. We give a one-year subscription to this paper with every order of \$25.00 or more. Address

TRUE-TO-NAME NURSERY

Phone 2002K

Hood River, Oregon

## AGRICULTURAL STATISTICS OF STATE OF OREGON

**U**NDER date of April 18, 1911, Director of the Census Durand issued the first official statement from the Census Bureau relative to the agricultural statistics of the State of Oregon collected at the thirteenth decennial United States census, April 15, 1910. It is based on a preliminary comparative summary submitted to the director by Dr. Le Grand Powers, chief statistician of the division of agriculture in the bureau of the census. This summary shows, for both the census of 1910 and that of 1900, the reported total value of farm land, buildings, and implements and machinery; total acreage, improved acreage, average acres per farm, average value per acre of farm land and buildings, average value per acre of farm land alone, and aggregate expenditures for labor and fertilizers. It also distributes the total number of farms according to color of farmer, specified character of tenure, whether held free or mortgaged by owners and by certain acreage groups.

The director gives notice that the summary's figures are subject to revision later, owing to the fact that a number of farms whose returns are incomplete will be included in the final tables. These additions will not, in all probability, modify any of the amounts or rates contained in the present statement. The census of agriculture was taken primarily for the purpose of obtaining an accurate inventory of all classes of farm property existing on April 15, 1910, a complete exhibit of farm operations during the year ended December 31, 1909, and a statement of the number and value of domestic animals in cities and villages on April 15, 1910. Statements relative to acreage and yield of crops and the domestic animals in Oregon will be issued by Director Durand as soon as the tabulation of this data has been completed.

It is pointed out in the statement today that the principal rates of increase in Oregon in 1910, as against 1900, are: In the total value of all farm land alone, 262 per cent; in the total value of farm land and buildings, 243 per cent; in the average value per acre of farm land alone, 214 per cent; in the average value per acre of farm land and buildings, 197 per cent; in the total expenditures for fertilizers, 133 per cent; in the total value of farm buildings alone, 127 per cent; in the total expenditures for labor, 127 per cent; in the total value of all farm implements and machinery, 102 per cent; in the total improved farm acreage, 28 per cent; in the whole number of farms, 26 per cent, and in the total farm acreage, 15 per cent. The only decrease during the decade, among the items for which per cents are given in the first section of the summary, occurred in the average acres per farm, namely, 8 per cent. The statement shows in detail that the number of farms reported in 1910 was 45,128, as compared with 35,837 in 1900, an increase of 9,291, or 26 per cent.

The total value of farm land and buildings was given in 1910 as \$453,571,000, as against \$132,338,000 in 1900, an increase

of \$321,233,000, or 243 per cent. The total value of all farm land alone was reported in 1910 as \$409,949,000, as compared with \$113,138,000 in 1900, a gain of \$296,811,000, or 262 per cent. The total value of farm buildings alone was given in 1910 as \$43,622,000, as against \$19,200,000 in 1900, an increase of \$24,422,000, or 127 per cent. In 1910 the value of the farm land alone constituted 90 per cent of the total value of farm land and buildings, as compared with 85 per cent in 1900.

The reported value of all farm implements and machinery was \$13,135,000 in 1910, as against \$6,507,000 in 1900, a gain of \$6,628,000, or 102 per cent. The total acreage reported in 1910 was 11,628,000 acres, as compared with 10,071,000 in 1900, an increase of 1,557,000 acres, or 15 per cent. The improved acreage was returned in 1910 as amounting to 4,253,000 acres, as against 3,328,000 in 1900, an increase of 925,000 acres, or 28 per cent. The improved acreage formed 37 per cent of the total acreage in 1910, and 33 per cent in 1900. The average acres per farm reported in 1910 was 258, as against 281 in 1900, a decrease of 23 acres, or 8 per cent. The average value per acre of farm land and buildings in 1910 is stated as \$39.01, as against \$13.14 in 1900, a rise of \$25.87, or 197 per cent. The average value per acre of farm land alone in 1910 was reported as \$35.26, while in 1900 it was \$11.23, the amount of gain being \$24.03, or 214 per cent.

Of the whole number, 45,128, of farms reported in 1910 there were 44,511, or 99 per cent, operated by white farmers, and 617, or 1 per cent, by negro and other non-white farmers, as compared with a total of 35,837 in 1900, of which 35,286, or 98 per cent, were conducted by white farmers, and 551, or 2 per cent, by negro and other non-white. The increase in the number of farms of white farmers during the decade amounted to 9,225, and in the number of farms of negro and other non-white farmers to 66.

## IT IS FREE

Our new 1911 catalog and price list of fruit and ornamental trees is free for the asking. Let us figure on your wants.

Richland Nursery Company  
Agents Wanted Richland, Washington

## FRUIT BOXES

"Larch" Apple Boxes and  
Strawberry Crates our specialty

## BUILDING MATERIAL

We carry a complete line. Lumber, Shingles, Lath, Plaster, Cement, Lime, Sash and Doors, Brick, Roofing, Building Paper, etc.

We solicit your patronage

Bridal Veil Lumbering Co.  
Hood River, Oregon



The total number of farms operated in 1910 by owners, part owners and owners and tenants, comprising the "all owners" class, was 37,456, as compared with 28,963 in 1900, an increase of 8,493. The total number of farms conducted in 1910 by cash tenants, share tenants and cash and share tenants, comprising the "all tenants" class, was 6,837, as against 6,366 in 1900, an increase of 471. The total number of farms operated by managers in 1910 was 835, as compared with 508 in 1900, an increase of 327. The total number of farms operated by the "all owners" class constituted 83 per cent of the whole number of farms in 1910 and 81 per cent in 1900; those operated by the "all tenants" class, 15 per cent in 1910 and 18 per cent in 1900, and those conducted by managers, 2 per cent in 1910 and 1 per cent in 1900. Of the total number, 37,456 farms operated in 1910 by the "all owners" class, there were 24,877, or 66 per cent, reported as owned free of incumbrance, and 12,579, or 34 per cent, mortgaged; for 270 of those reported as owned free, however, no report of mortgage debt was secured.

In 1900 information was secured concerning the "owned farm homes." At that time 21,628, or 76 per cent, were reported free from debt and 7,010, or 24 per cent, mortgaged. There were 862 in 1900 for which no mortgage report was secured, these being included in the farms free from debt. The Census Bureau has no information respecting the number of mortgaged farms leased to tenants.

The statement relative to farms distributed according to certain acreage groups shows that those of nineteen acres and under numbered 5,942 in 1910,

and 3,071 in 1900, a gain of 2,871; of twenty to forty-nine acres, 6,829 in 1910, and 4,083 in 1900, an increase of 2,746; of fifty to ninety-nine acres, 6,758 in 1910, and 4,673 in 1900, an increase of 2,085; of one hundred to one hundred and seventy-four acres, 11,856 in 1910, and 11,055 in 1900, an increase of 801; of one hundred and seventy-five to four hundred and ninety-nine acres, 9,321 in 1910, and 9,228 in 1900, an increase of 93; of five hundred and nine hundred and ninety-nine acres, 2,709 in 1910, and 2,440 in 1900, an increase of 269, and of one thousand acres and over, 1,713 in 1910, and 1,287 in 1900, an increase of 426.

Of the whole number of farms, those of nineteen acres and under formed 13 per cent in 1910 and 8 per cent in 1900; those of twenty and forty-nine acres, 15 per cent in 1910 and 11 per cent in 1900; those of fifty and ninety-nine acres, 15 per cent in 1910 and 13 per cent in 1900; those of one hundred and one hundred and seventy-four acres, 26 per cent in 1910 and 31 per cent in 1900; those of one hundred and seventy-five and four hundred and ninety-nine acres, 21 per cent in 1910 and 26 per cent in 1900; those of five hundred and nine hundred and ninety-nine acres, 6 per cent in 1910 and 7 per cent in 1900, and those of one thousand acres and over, 4 per cent in both decades. The expenditures for labor in 1910 reached the sum of \$11,011,000, as compared with \$4,843,000 in 1900, an increase of \$6,168,000, or 127 per cent. The expenditures for fertilizers in 1910 amounted to \$63,000, while in 1900 it was \$27,000, an increase of \$36,000, or 133 per cent.

The preliminary comparative summary for the state follows:

#### FARMS BY ACREAGE, VALUE OF LAND, BUILDINGS, IMPLEMENTS, ETC.

	1910	1900	Pct. Increase 1900-1910
Total acreage .....	11,628,000	10,071,000	15
Improved acreage .....	4,253,000	3,328,000	28
Value of land .....	\$409,949,000	\$113,138,000	262
Value of buildings .....	\$43,622,000	\$19,200,000	127
Value of implements and machinery .....	\$13,135,000	\$6,507,000	102
Average value per acre of land and buildings .....	\$39.01	\$13.14	197
Average value per acre of land alone .....	\$35.26	\$11.23	214
Expenditures for labor .....	\$11,011,000	\$4,843,000	127
Fertilizers .....	\$63,000	\$27,000	133

#### FARMS BY TENURE, ACREAGE GROUPS, ETC.

	1910	1900	Am. Increase 1900-1910
All farms by tenure .....	45,128	35,837	9,291
All owners .....	37,456	28,963	8,493
All tenants .....	6,837	6,366	471
Managers .....	835	508	327
Distribution by acreage groups .....	45,128	35,837	9,291
19 acres and under .....	5,942	3,071	2,871
20 to 49 acres .....	6,829	4,083	2,746
50 to 99 acres .....	6,758	4,673	2,085
100 to 174 acres .....	11,856	11,055	801
175 to 499 acres .....	9,321	9,228	93
500 to 999 acres .....	2,709	2,440	269
1,000 acres and over .....	1,713	1,287	426

**APPLE CONGRESS AND EXPOSITION FOR DENVER.**—A plan is being worked upon that will bring the next session of the American Apple Congress to Denver, to be held in connection with a national apple exposition. The dates most favored for the holding of this great combined feat is the week of November 6 to 12. Under the proposed plan an exposition association will be organized with a capital of \$50,000. Both the congress and the exposition association are to be incorporated under the laws of the State of Colorado. Invitations have been received by the Congress from several large cities to have the next meeting held with them. Almost all these have "backed up" when informed by the executive officers what sum of money will be required to bring them this meeting. Denver seems to be the only city that is willing to take hold of the proposition and see it through. One apple show held in Denver was an entire success. While there was a small loss the benefits to the city and the apple industry were of untold value. The exposition association will be organized by prominent Denver people and fruit growers. A contract will be entered into by the Apple Congress and the Exposition Association whereby mutual benefits will be derived and a most profitable arrangement perfected. The plan has the approval of all who have been consulted in the matter by Clinton L. Oliver, secretary of the Congress, and the entire details will soon be made public. The season has now arrived when the apple crop conditions are considered settled, and the apple growers are anxious to demonstrate what their various sections can produce. A show such as is proposed will be a wonderful drawing card for growers and dealers, and as no show is more beautiful than an apple show, the attendance in a city like Denver, where one show has been held and the people got a taste of it, will be assured.

**MUSIC LESSONS.**—For the next thirty days the Pacific Conservatory of Music is offering a complete course of fifty-two lessons (for piano or organ), all instruction books, exercises, etc., and thirty copies of best grade music, with an absolute guarantee of results or money refunded. This course may be taken up by anyone whose age is between eight and forty-five. Fifty dollars being the regular price for this complete course; we are offering the same for \$22 for thirty days only. We will also allow four months' time in which to pay for same, or if you wish to pay cash it would be only \$20. What is taught in this year's course are: The fundamental principles of music, sight reading, ear training, time, rhythm, phrasing, pedaling, major and minor scales, elementary harmony, composition, modulation and theory; in fact we will teach the pupil to play well, any kind of music, on completion of this course, which the pupil has two years to complete. You are sure of learning more out of one of our written lessons than you would out of three lessons given by the average so-called music teacher. Our lessons are so arranged that time, touch, technique and expression are the easiest to master. Today we are teaching upward of 1,000 pupils on the Pacific Coast. Many who have struggled for success under the private teachers without results are today fine musicians. On request, we will mail you free of charge two copies of music, also samples of our lessons. Remember, this offer holds good only for thirty days from this date. Make application today. Pacific Conservatory of Music, Portland, Oregon.

**COMMERCIAL VALUE OF DWARF FRUITS.**—"The dwarf fruit as a commercial proposition is still in an experimental condition in this state," said Professor C. I. Lewis, horticulturist of the Oregon Agricultural College, in a recent discussion of the fruits of the state. "The dwarf pear," he continued, "looks quite promising to be used in plantings by itself or as a filler. There is one dwarf pear orchard in Idaho and a number in this state, but few are in bearing as yet. The trees can be planted close together. They come into bearing early and generally produce a fine crop. They are generally worked on Angers Quince or Portuguese stock and then worked over to Duchess and Koonce, and finally worked over to whatever variety is desired. The dwarf is obtained by using a root that is slow growing and then pruning. The pruning should be done in such a way as to throw out the laterals and spurs. Summer pruning is practiced much more with the dwarf stock than with the standard. Dwarf peaches are also being grown; these come into bearing quite heavily the first year. There are several plantings in this state, and it will only be a short time before we will know more of these. The dwarf apple has been tried very sparingly. When it is put on Paradise stock it is more of a curiosity, but when planted on the Doucin stock it may make a satisfactory tree for Western Oregon. The dwarf fruit offers a splendid opportunity for a home garden and a good conservative field for trial in the commercial orchard."

**THE PETROL MANUFACTURING COMPANY** has placed a small ad. elsewhere in this edition which might be overlooked, therefore we are calling the attention of the fruit grower to this commodity, as it is used in filling up cracks and leaks in boats, and it occurs to us it might be used in stopping leaks in wooden sluices.

## Send in Your Wants

We furnish help and situations  
of all kinds FREE

Address

**American Business Men's  
Association**

524 Peyton Building  
Spokane, Washington

## Drain Tile

Most Important Investment  
for the tiller of the soil

Write for prices and free booklet

**Lang & Bullock, Inc.**

601 Beck Building  
PORTLAND, OREGON

# FALL BREAKING AND PREPARATION OF SEED BED

BY S. A. KNAPP. UNITED STATES DEPARTMENT OF AGRICULTURE

**U**PON the inauguration of the farmers' co-operative demonstration work in the Southern states it was found necessary to outline some of the fundamental principles of good farming and to insist that the tillers of the soil should become familiar with them and practice them as a first step in the betterment of farm life. These principles are as follows: Prepare a deep and thoroughly pulverized seed bed, well drained; break in the fall to a depth of eight, ten or twelve inches, according to the soil, with implements that will not bring too much of the subsoil to the surface. (The foregoing depths should be reached gradually if a field is broken with an ordinary turning plow. If a disk plow is used, it is safe to go to the above depths at once.)

It is the purpose of the farmers' co-operative demonstration work to insist upon such preparation of the soil as will furnish the best feeding grounds for the roots and such as will provide at all times plenty of moisture and food for the growing plants. It is better to secure ten or twelve inches of well drained, thoroughly pulverized soil filled with humus than to go deeper at the expense of less thorough preparation. The presence of heat, air and moisture is essential to chemical and germ action in the preparation of plant food in the soil. The depths to which these penetrate the soil in the South depend upon the depth of the plowing, provided the soil is well drained. There is no use in plowing down into a subsoil full of water.

It has been proved without question that the roots of plants penetrate the soil deeper and feed deeper in deeply plowed land. Thus, in general, it may be stated that when the soil is plowed three inches deep the plants have three inches of food,

when plowed six inches deep they have six inches of food, and when plowed ten inches deep they have ten inches of food. The fact that the bottom portions of the plowed land are not as rich in available plant food as the top portions shows the necessity of getting more air and heat down to them by deeper tillage. The soil requirements most essential to the growth of plants are heat and moisture. Deep breaking insures air and heat at a greater depth.

For plants to do their best there must be in the soil a constant supply of moisture, so that a film of water can envelop the soil particles and absorb nutritive elements. The hair roots of plants drink this for nourishment. If there is any more than enough to serve as films for the soil particles and capillary water, there is too much, and it should be drained off. This can be determined by digging a hole twenty inches deep. If there is standing water in the bottom of the hole, it indicates that there is too much water in the soil or subsoil. The capacity of a given soil to hold film and capillary moisture depends upon how finely it is pulverized and upon the amount of humus in it. Unplowed lands retain but little water. Thoroughly pulverized soil three inches deep cannot store enough to make a good crop.

In all Southern states there are every year periods of drouth, sometimes not serious, but generally sufficiently protracted to reduce the crop. The remedy for this is increased storage capacity for moisture. This can be accomplished by deep and thorough tillage and by filling the soil with humus (partly decayed vegetation). The effect of deep tillage has been explained. The effect of humus is to increase greatly the storage capacity

of soils for water and to reduce evaporation. A pound of humus will store seven and one-half times as much moisture as a pound of sand, and the sand will lose its water by evaporation three and one-half times more rapidly than the humus. A clay soil will store only about one-fourth as much moisture as humus, and will lose it by evaporation twice as rapidly.

Plants use an enormous quantity of water. An acre of good corn will absorb and evaporate during its growth nearly ten inches of water. About three-fourths of this amount will be required during the last seventy-five days of its growth, or at the rate of three inches of water a month. This is in addition to evaporation from the soil, which, even with the retarding influence of the dust mulch, will amount to several inches each month in midsummer. In case the land is plowed only three or four inches deep, though thoroughly pulverized, it will store an amount of moisture entirely insufficient to supply crop requirements in any protracted drouth. These shallow and generally poorly prepared seed beds are the principal cause of the low corn yields in the South, and they affect the cotton yields similarly, but not so much, because cotton is a more drouth-resistant plant than corn. If planting is done at all, it is folly to prepare a seed bed so shallow as to bring about the almost total loss of the crop some years and a reduced crop every year.

Many farmers plow or cultivate their corn nearly as deeply as they break their land in preparing a seed bed; this leaves no space for roots in the pulverized and aired soil. Roots occupy a large space, if all the roots of a single vigorous corn-stalk were placed end to end they would reach more than a mile, and if allowed by the plowing they will fill the soil to a considerable depth and feed in all portions of it. In the principal corn producing areas of the South the annual rainfall is thirty-five inches or more, and here in a soil properly prepared for corn the great body of the roots will lie from three to twelve inches from the surface and will feed within two inches of the surface if allowed by shallow cultivation.

At the Wisconsin Agricultural Experiment Station it was found that when corn was three feet high the roots had penetrated the soil for two feet, and thoroughly occupied it. At maturity the roots were four feet deep. At this time the upper laterals were about four inches from the surface. At the North Dakota Agricultural Experiment Station the corn roots had penetrated three and one-half feet deep, and fully occupied the ground ninety days after planting. At the Minnesota Agricultural Experiment Station the corn roots had penetrated twelve inches deep and had spread laterally eighteen inches eighteen days after the planting. In most portions of the South nothing less than an eight-inch seed bed will insure even a fair corn crop, and ten inches is safer. Some soils may require more. From six to eight inches

## LARGER PROFITS

### VERY LITTLE CAPITAL INVESTED

No industry pays larger profits than the canning of fruit and vegetables. Yet millions of dollars worth of fruit and vegetables go to waste every year.

If others can make large profits from the canning industry, why not also you?

Why turn the cannery profits over to the big corporation?

Why let your fruit and vegetables go to waste?

### CAN YOUR OWN PRODUCTS AND DO IT AT HOME

It pays equally well on a small or large scale.

### BUY A CANNING OUTFIT

Put the canning profits in your own pocket.

### WE SHOW YOU HOW

Outfits furnished in various sizes at a total cost of from \$15.00 up to meet your requirements.

Write today for our catalogues and free information on "Successful Home Canning."

## FOOTT-TITUS MACHINERY HOUSE

181-187 Union Avenue

PORTLAND, OREGON

of preparation for cotton corresponds to eight and ten inches for corn, so far as the requirements of the plant are concerned.

Plowing three, four, five or six inches deep is only common plowing. In our instructions nothing less than eight inches is considered "deep" plowing. We are not advocating a single breaking of eight inches in depth once in two or three years, but the preparation of an eight, ten or twelve-inch seed bed, thoroughly pulverized and filled with humus. It is not intended here to insist that this should be done at once in all cases. These are the depths that must be reached finally to secure the best crop results. The farmer must determine how soon he can secure these depths under his conditions.

Always plow in the fall before the winter rains set in—the earlier after the first of October the better. Always use a cover crop of oats, barley, wheat, rye, vetch or crimson clover, if possible. Every observant farmer has noted that seeds germinate more quickly and that plants grow more rapidly on fall-breaking than on spring-breaking. Fall plowing renders more plant food ready for use, while the preparation of the land in the fall saves work in the spring, when everything on the farm is crowding. A cover crop is a net gain. It keeps the soil from washing, it utilizes the plant food that otherwise might escape into the air, and it adds humus. The soil is improved by the crop, and winter grazing is provided. In plowed land, properly handled, the loss of plant food is less than in unplowed land; more plant food can be produced and more can be stored. In case a cover crop is used the loss of plant food is slight.

An objection is sometimes urged that fall plowed soil becomes saturated with water during the winter and remains wetter and colder later in the spring than land left unbroken in the fall. This is true only upon land not sufficiently drained and where the breaking is shallow. Water passes through deep breaking readily, and with reasonable drainage it is ready for planting earlier than lands broken in the spring. With deep breaking and an abundance of humus it will be possible to dispense with many terraces and yet have no washing of the soil. Terraces are seldom required on the steepest hillsides of the North. Deep freezing opens the soil for the absorption of the rain. When land is nearly level, with a stiff subsoil, it should be flat-broken, but left in ridges or narrow lands about five or six feet wide, suitable for planting, with a dead furrow between. This provides winter drainage and keeps the pulverized soil out of the water, which is important even if unbroken.

The advice to go down gradually is given solely because the inexperienced farmer may try to plow too deeply the first time and bring to the surface too much of the subsoil. The best plan is to use the disk plow, so set that it will not bring the subsoil to the surface. Generally it may be sent down eight, ten or twelve inches with impunity, and,

if done in the fall, with slight addition to the cost of shallower breaking. Double plowing—that is, to break at the usual depth and then follow in the same furrow with a narrower plow or scooter, and go down as deep as desired—is better than shallow plowing, though a little more expensive plan than the use of a disk plow, and not so effective. Many trials, made on a great variety of soils, show that the cost of plowing ten inches deep with a disk plow is on an average about fifty cents per acre more than ordinary breaking, and in double plowing, as above described, the additional cost averages \$1.25 per acre. These costs are somewhat less when a ten-inch depth of plowing has become the rule upon a given field. There is no question that breaking and pulverizing to a depth of

eight to ten or twelve inches and adding plenty of humus is economical. Whether a plant has plenty of food all the time or only part of the time makes the difference between a good crop and a very poor crop.

The depth of plowing must be determined by the farmer himself. He knows the conditions and is the best judge of the cost. In many sections, if done in the fall it undoubtedly pays to sub-soil fifteen or twenty inches. This has been proved by the best farmers and experimenters in the world. Some sub-soils in humid climates have been made so close and compact by the abundant rainfall that air does not penetrate them to aid in preparing plant food. Such fields, therefore, may not show any benefits of sub-soiling until after two or more years. It rarely

## VIRGINIA-APPLE-ORCHARDS



\$350, on long time and easy payments, buys a ten-acre apple orchard tract in the beautiful Shenandoah Valley of Virginia. Other lands \$15 per acre and up. Write for beautiful booklets and excursion rates.

**PAY BIG PROFITS**

F. H. LaBaume, Agricultural Agent N. & W. Ry., Box 2076, Roanoke, Virginia

## Do You Want a Home in the "Beautiful Ozarks"?

OF MISSOURI—IN THE FAMOUS STRAWBERRY LAND?

Apples, peaches, pears, grapes, raspberries, etc., all grow excellently. Ideal location for the dairy and poultry business. We offer for sale 60,000 acres of land, in forty-acre tracts or more, cheap and on easy terms. Located in Stone and McDonald Counties.

For further information address

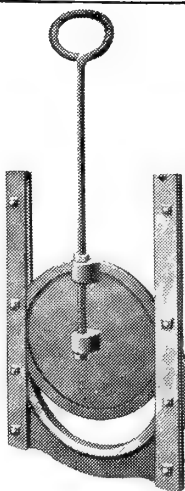
**MCDONALD LAND & MINING COMPANY**

Rooms 301-302 Miner's Bank Building

Joseph C. Watkins, Manager

JOPLIN, MISSOURI

## Wooden Gates Waste Water!



You know how much trouble you have with wooden gates in your small irrigating ditches and how unhandy they are. The wood swells and the gates stick. In opening you pull or pry the gates out altogether, and by the time you have put them back where you want them you have lost time and water. The wood warps and the gates leak. Leaky gates frequently mean washouts, and by the time the breaks are repaired you may have lost more than the price of "Northwestern" iron gates.

Water lost means crops lost. Crops lost mean money lost. During the irrigating season your time is worth as much as your water. You won't lose either if you get "Northwestern" iron gates.

Don't wait until your wooden gates break, rot or wash out. Don't waste any more time repairing wooden gates. Replace them with "Northwestern" iron gates, which last a lifetime without repairs.

The gates shown here are the two most satisfactory hand-operated gates. They are made in all sizes, from 3 inches to 24 inches, with round, square or rectangular openings, for connecting with any kind of pipe or tile, for setting in cement, for bolting to wooden boxes. Lifting rods may be any length required.



With these gates your water is under perfect control, and you can economically regulate it and make it go further. They are easily and quickly opened or closed, and save time just when your time is worth the most to you. They are so strong and simple they cannot get out of order, and the gates cannot be pulled out of the frames.

One "Northwestern" iron gate will outlast a dozen wooden gates. You know how much your wooden gates have already cost you for repairing and replacing, and what you will have to spend this year and next. They may already have cost you more than "Northwestern" iron gates, and the expense of repairing wooden gates goes on year after year. "Northwestern" iron headgates cost a little more, but are worth much more to you than the difference in cost. An iron headgate is cheap because the first cost is the only cost.

There are many other gates in the "Northwestern" line, and it will pay you to get my complete catalogue, which will be sent you for the asking.

**C. D. BUTCHART**

Specialist in the manufacture and design of headgates and headgate lifts for any purpose, any pressure, any size, any price. Office: 501 Mercantile Building DENVER, COLORADO



### Paint Is Cheaper Than New Buildings

You know how quickly a building that never saw paint goes to rack and ruin.

The boards rot around the nails, they crack and warp.

Only constant repair keeps the building standing.

An occasional coat of good paint made with

### "Dutch Boy Painter" White Lead

and real linseed oil will save your buildings and reduce repair, to say nothing of improving the looks of the place.

Decide to use "Dutch Boy Painter" White Lead this spring. It's a mighty good investment.

Write for our "Helps No. 530" which will tell you why, how, with what and when to paint.

#### National Lead Company

New York Cleveland Chicago  
St. Louis Boston Buffalo  
Cincinnati San Francisco  
John T. Lewis & Bros. Co., Philadelphia  
National Lead & Oil Co., Pittsburgh



### The Hamlin School

A Boarding and Day School for Girls  
Comprising a French School for Little Children, Primary, Intermediate, High School and Post Graduate Departments, Household Economics, Drawing, Painting and Elocution. Accredited by the University of California, by Leland Stanford Junior University and by Eastern Colleges.

Courses in Singing, Instrumental Music (piano, violin, organ, harp, flute, cello, etc.), Theory and Composition, Harmony, Sight Reading, Musical Dictation, Choral and Orchestral Practice, etc., are offered by the newly formed Music Department.

For particulars in regard to the School, please send for prospectus, and address

MISS SARAH D. HAMLIN, A. M.  
2230 Pacific Avenue San Francisco

pays to sub-soil land in the spring, and it is never advisable to use the sub-soil plow when the sub-soil is fully saturated with water, even though the surface be fairly dry. Under such conditions of plowing the clay sub-soil is pressed and packed, when the object is to pulverize it and allow the air to act upon it.

No principle in agriculture has been more thoroughly demonstrated than the value of a deep, thoroughly pulverized seed bed. The Romans plowed on an average nine inches deep—always three times for a crop, and in stiff lands nine times. They did not call three inches "plowing;" it was only "scarifying." The Flemish farmers were the first to follow the better lines of agriculture after the dark ages. They devoted their efforts to three main points: (1) The frequent and deep pulverization of the soil; (2) the accumulation of manure, and (3) the destruction of weeds. A deeper and more thoroughly pulverized seed bed was the foundation upon which England built an improved agriculture, and this principle has been generally accepted there for more than one hundred and sixty years, until the average production has increased nearly five fold.

A late letter from Hon. William Saunders, director of the Central Experimental Farm, Ottawa, Canada, states that farmers usually plow shallow immediately after harvest (August) "to preserve moisture and destroy weeds."

\*\*\* In October they commonly plow eight inches deep. Any plowing done in the spring months is usually shallow, not more than six inches deep." Eight inches of breaking in October in Canada, where frosts penetrate three or four feet deep, is better for moisture storage than plowing to a depth of fifteen inches in the Southern States. The writer has visited a number of Southern agricultural colleges this year. In every case the directors of their experiment stations

avored a deep and thoroughly prepared seed bed.

The Georgia Experiment Station bulletins repeatedly urge a deep, mellow and rich seed bed for corn; and they insist that if the soil is not naturally such, it should be made so by tillage and the addition of humus. A bulletin of the Georgia Experiment Station on "Cotton" states that "fourteen years of experimentation have justified certain conclusions that may be accepted as practically final." The following is one of them: "Thorough breaking and commingling of the upper soil, gradually increasing the depth to eight or ten inches, using plow and harrow, is more effective than deeper but less thorough pulverizing."

A North Carolina bulletin states: "It unquestionably pays well to thoroughly break and broadcast-harrow land for corn. Using a two-horse plow and running it eight to ten inches deep, and afterwards harrowing with large smoothing harrow, puts the land in very nice condition."

On the sugar plantations of Louisiana the tillage for cane averages twelve to fifteen inches in depth. On the Ewa plantation, in the Hawaiian Islands, the average depth of plowing is thirty inches. This plantation produces the largest crops of sugar cane to the acre in the world.

Nature's plan of improving soils is to use a cover crop of weeds, grass, shrubs or trees, and to sub-soil by sending the roots down one, two, three or four feet, as the case may be, thus airing and enriching the sub-soil without bringing it to the surface. In the farmers' co-operative demonstration work the importance of a deep and thoroughly prepared seed bed, like a garden, has been most widely demonstrated. Thousands of tests have been made each year by exact and painstaking farmers to an extent that leaves no possible room for doubt as to the great value of a deep and thoroughly prepared seed bed.

Concretely stated, a deep, thoroughly pulverized seed bed filled with humus has the following advantages: It provides more food, because it increases chemical action and multiplies bacterial life in a larger body of soil. It stores more moisture, and it loses its moisture less rapidly on account of its cooler

### Order Direct and Save Agent's Profit

Why not order your nursery stock direct from us, and save that 25 per cent commission which most nurserymen allow their salesmen? The price we name for our stock is a price based on actual growing cost, plus our one small margin of profit, a price eliminating all traveling men's expenses, dealers' profits and agents' commissions. Write us before placing your order.

DONALD NURSERY COMPANY, Donald, Oregon

## RAW HOOD RIVER LAND IN TRACTS OF ANY SIZE AT WHOLESALE PRICES

The Boneboro Orchard Company is developing about 1,000 acres of the finest orchard land in Hood River Valley. Already 120 acres has been cleared and planted and that much more is being cleared and planted this year. However, so far the developers have been unable to set the orchard rapidly enough to meet the demands of their customers. Therefore, the unimproved land has been placed on the market at low prices and on easy terms for the advantage of investors and orchard men who wish to develop their own property. This land is deep, well drained volcanic soil with a gentle north slope. Railroad station on the land.

Several small tracts to be planted this fall under Boneboro development are still available to persons wishing to secure the best orchard land in Hood River started right.

For full particulars, descriptions and maps address

**BONEBORO ORCHARD COMPANY, Hood River, Oregon**



lower strata and the presence of more humus. It increases the number of roots that a plant will throw out. It allows plants to root deeper and find permanent moisture. It largely obviates the necessity of terracing, because it holds so much water in suspension that heavy rainfalls will go to the bottom and be held by the drier earth above until they can be absorbed by the sub-soil. Humus enables the soil to store more moisture, increases its temperature, makes it more porous, furnishes plant food, stimulates chemical action and fosters bacterial life.

Exceptions to general rules for deep fall plowing: Never plow below the line of standing water in the soil, because the sub-soil cannot be pulverized in water. The water level must first be lowered by drainage. Do no deep fall plowing on light, sandy land or dry, semi-arid plains, and this especially applies to elevated sandy table lands and most of the deep sandy lands of the South. Such lands can be helped by adding humus and using a winter cover crop. The object of deep fall plowing is mainly to increase the supply of plant food and the storage of moisture in the soil. While this preparation is of great value on rolling lands and nearly all fields so long in cultivation that plant growth is medium or less, there are some soils that for the production of cotton better not be deep fall broken, such as very rich and moist river bottoms and the virgin black land prairies of the Gulf States, for the evident reason that there is too much plant food for cotton already available in the soil, with abundant moisture—conditions that make for an excessive growth of the cotton stalks and a consequent decrease in fruitage—even under ordinary conditions. For the cotton crop upon such lands it is better to plow very shallow in the spring and bed upon the firm soil. Do not plow deeply or sub-soil in the spring. The sub-soil is generally too full of water, and it is too late for much effective action of the air upon the soil and for the winter rains to firm the sub-soil before planting for cotton. Thin gray soils, overlaid with yellow or stiff clay near the surface, most of the post oak flats and the comparatively level coast lands should be broken in ridges (back-furrowed) five, six or seven feet wide, according to the crop to be planted. Cotton and corn may be left thicker in the row to offset the wider space between the rows. The dead furrow between the rows should be double plowed and made as deep as practicable, with a good outlet for the water. This method will gradually deepen the soil, increase drainage, reduce washing and give a larger and deeper body of loose, aired earth for the roots. This plan is excellent when surface drainage is necessary. Soil to be live and friable must be kept out of standing water winter and summer.

The sugar planters of Louisiana all use the ridge method (generally seven feet wide) for both sugar cane and corn. The dead furrow is as deep as a plow drawn by four or six heavy mules can penetrate at the last breaking. This

gives an average depth of tillage of twelve or fifteen inches. The adoption of the ridge method on demonstration fields in the Yazoo Delta in 1906 increased the yield of corn from fourteen bushels per acre to seventy bushels. No fertilizer was used.

In case no winter cover crop is used the soil should be disked or harrowed two or three times during the winter, provided it is dry enough. Give good drainage to all parts of the field. Any cultivation done after the deep fall breaking should be shallow—not more than three or four inches deep.

♦ ♦ ♦  
**H**HEATING ORCHARDS to protect buds, flowers and young fruit from late spring frosts has proven to be practicable. There are three ways of generating heat in the orchard—by burning oil, by burning coal and by burning wood or brush. Heat is what is wanted, and not smoke. Smoke will help at times, but cannot often be depended upon, especially in the hilly or rolling lands of Missouri. In a deep valley the smudge value of smoke would be the greatest. If smoke can be made to hang over the orchard it serves the purpose of preventing the escape of a great deal of natural heat which radiates from the earth.

In Missouri it will rarely be necessary to raise the temperature more than two or three degrees in order to save the crop. Swelling buds, full blown flowers, and even young fruit, can stand more cold than is generally supposed. The degree of cold that will be fatal will depend upon the stage of development of bud, flower or fruit. The danger points for peaches are as follows: Buds appreciably swollen, zero; buds showing pink, 15 above zero; almost open, 25 above zero; flowers newly opened, 26 above zero; petals beginning to fall, 28 above zero; all petals off, 30 above zero; "shucks" (calyx tubes) beginning to shed off, 32 above zero. It should be added that the farther along the young fruit is in its development the less cold it can stand. The most tender stage is not when trees are in full bloom. The danger points for apples would correspond pretty closely to the different stages enumerated for peaches.

The danger points mentioned are conservative, as in each case a little lower temperature would not kill, but heaters should be lighted as these lines are approached. This applies to oil burners. When coal is used the heaters will have to be started from thirty to sixty minutes earlier, as they are slower in warming up. The same thing is true of burning wood. When the temperature is falling rapidly, in all cases, heaters should be started decidedly earlier than when it is going down gradually. Complete preparations for the heating should be made well in advance. The heaters may have to be filled and left in the orchard two or three weeks before they are needed. In the meantime they must be carefully covered, as rains may occur and wet coal, or water in oil, will cause very inefficient fires.

The number of heaters per acre will vary somewhat, depending upon their size and heat-giving powers. No heater holding less than two gallons of oil should be used, as it is not practicable to refill them during the night if used on a large scale. Coal burners also should be large enough to burn from five to seven hours. Used as a protection against spring frosts it will rarely be necessary to keep the fires going longer than four hours—from two o'clock in the morning until six—but in extreme cases they may have to be started as early as eleven o'clock. Always prepare for the worst. For apple and peach orchards it is not safe to use less than sixty or seventy of the larger types of heaters per acre. For the moderate sizes of both oil and coal burners eighty to one hundred per acre should insure absolute protection. In open strawberry fields at least 125 heaters per acre should be used to insure safety in time of very low temperature. The same is true of vineyards.

There are fifteen or more kinds of orchard heaters on the market, and prices vary all the way from \$20 to \$45 per hundred. The average price would be about \$30 per hundred, regardless of make, as the larger the heater used the fewer will be required per acre, and vice versa. Of course, these figures are only approximate. Oil in lots of less than a tank car (6,000 to 10,000 gallons) costs about five cents per gallon. In car lots the cost is two and one-half cents per gallon. Use nothing but fuel oil of thirty degrees specific gravity. This can be purchased through oil dealers everywhere. Oil may be stored in galvanized iron tanks or in cemented cisterns, where the walls have been coated over with a layer of asphalt paint to prevent leakage. Tanks holding 1,200 gallons cost about \$38 each. Where fuel and other things are purchased in large quantities the cost per acre is relatively less. Small orchardists should combine when purchasing supplies.

The cost of heating a fifteen-acre orchard, or larger, the first year would approximate \$45 to

\$50 per acre. Less than fifteen acres, where the owner purchased alone, the cost would be about \$55 to \$60 per acre. These estimates include heaters, fuel, storage, tanks and labor. Tank wagons would cost extra. After the first year the cost for heating would not be more than \$10 to \$20 per acre. These figures refer to oil heaters. We do not have the data for coal burners, but they would be no more, and probably less. Where a large block (10 acres or more) is heated the number of heaters per acre will be reduced, as fewer will be needed in the interior of the orchard. W. L. Howard, University of Missouri, Columbia, Missouri.

## WHY GO WEST?

Virginia offers this opportunity:

70-acre bearing apple orchard for sale. Trees vigorous, 12 to 20 years old. Ideal soil and location; no frost; elevation 1500 feet; low freight rates. Pleasant home; fine neighborhood. This orchard, together with all crops, extra land, horses and machinery, \$26,500.

GEO. C. CATCHPOLE

R. D. 2

Troutville, Virginia

## Fruit Ranch

We can sell all or half of a fine eighty-acre ranch, located in the famous White Salmon Valley, Washington, and only one and one-half miles from railway and steamer landing.

This place will pay nice income and make beautiful home in ideal country and climate.

Six-room house, with large living room and fireplace, bathroom, hot and cold water, etc.; about twenty-five acres cleared and in fruit, consisting of strawberries, apples, pears, peaches, etc.

Immediate possession can be given and price is right.

For further particulars address

**INLAND EMPIRE COMPANY**

212-14 Railway Exchange Building  
Portland, Oregon.

## TOO LATE!

Is the answer many a man has had to take during this last month, because he waited until the last moment to place his order, only to find stocks depleted and assortments broken.

It is time now to lay your plans for next season. If you are going to be on the market for nursery stock, drop us a line. We have splendid, clean, thrifty, guaranteed stock, on which we want to quote you. Quality comes first, with us, and we have what you want.

Our 1911 catalog is ready for your inspection, and we want to mail one to your address.

We need more salesmen, and if you can sell trees let us show you our proposition.

**Toppenish Nursery  
Company**

Toppenish, Washington





## Rogue River Valley

400-ACRE TRACT. FOR DEVELOPMENT AND SUBDIVISION.  
THE BEST RED SHOT AND LEAF MOLD BOTTOM SOIL.  
ONLY \$75.00 PER ACRE. TERMS. FOR QUICK TURN.

About 110 acres cleared. One to three miles from two main line railroad stations, about eight miles from here. Practically level. All tillable. Portland and Frisco auto tourists travel main county road through this tract. Two bearing family orchards, one shown on left. Nothing to compare with it in quality and price, in any high class district.

For this and other choice properties at low prices, write

**A. N. PARSONS, Real Estate, Grants Pass, Oregon**

References by permission: First National Bank, Grants Pass Banking and Trust Co.

**IF** You like this publication  
You find it helpful  
You are in earnest about  
“Better Fruit”

Tell your fruit growing neighbors  
about it—Help us in this way to  
help you.

## Nursery Stock of Absolute Reliability

That's the only kind to buy. Good trees bring success and poor trees failure. Fruit growers know this. They do not experiment. They buy non-irrigated, whole root, budded trees, and we number scores of them on our list of well pleased customers. We have prepared this season for an immense business. That means trees, trees, trees without limit as to variety and quantity. We also have an immense stock of small fruits and ornamentals. We solicit your confidence, and will take care of the rest. Catalogue on application.

**Salem Nursery Company, Salem, Oregon**

Reliable and live salesmen wanted.

## The Old Reliable

Twenty-three years in business. Twelve thousand dollars more business last year than any previous year.

A reputation to sustain.

**The Albany Nurseries**  
(INCORPORATED)

Bigger and better than ever  
A few more salesmen wanted

## THINGS WE ARE AGENTS FOR

KNOX HATS  
ALFRED BENJAMIN & CO.'S  
CLOTHING  
DR. JAEGER UNDERWEAR  
DR. DEIMEL LINEN MESH  
UNDERWEAR  
DENT'S and FOWNES' GLOVES  
**Buffum & Pendleton**  
311 Morrison St., Portland, Oregon

**FRUIT** Western  
Soft Pine.  
Light, strong  
and durable.  
“Better Fruit”  
subscribers  
demand the  
“Better Box.” **BOXES**

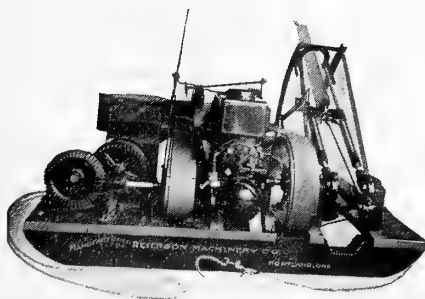
CAN MAKE TWO CARLOADS DAILY

**Washington Mill Co.**

Wholesale Manufacturers

Spokane, Washington

## “King of the Woods” Power Drag Saw



The only one-man self-moving Power Drag Saw built that will saw twenty to forty cords a day costing less than \$1.00 to operate, with an earning capacity of \$20.00 to \$30.00 per day. Pays for itself in less than three weeks. Saws logs from six inches to six feet in diameter. Pulls itself uphill or down. There's more you ought to know. Let us tell you. Catalogue containing complete information and prices just off the press, sent free with testimonials from users. Your money back if not as represented. Write.

**REIERSON MACHINERY CO.**

Sole Manufacturers

PORTLAND, OREGON

# Excursion Fares East

VIA  
Oregon-Washington Railroad and Navigation Company

Round Trip Summer Excursion Fares will be effective on dates shown below in May, June, July, August and September, 1911, to

Atlantic City, N. J.....	\$102.40	Duluth via Council Bluffs..	\$66.90	Rochester, N. Y.....	\$91.35
Baltimore .....	107.50	do via Kansas City....	68.70	St. Joseph.....	60.00
Boston .....	110.00	Kansas City.....	60.00	do via St. Paul.....	65.70
Buffalo .....	91.50	do via St. Paul .....	65.70	St. Louis.....	70.00
Chicago .....	72.50	Milwaukee .....	72.50	St. Paul.....	60.00
Council Bluffs .....	60.00	Minneapolis .....	60.00	do via Council Bluffs..	63.90
do via St. Paul .....	63.90	do via Council Bluffs..	63.90	do via Kansas City....	65.70
Denver .....	55.00	Montreal .....	105.00	Toronto .....	91.50
Detroit .....	82.50	New York .....	108.50	Washington .....	107.50
Duluth .....	60.00	Philadelphia .....	108.50	Winnipeg .....	60.00
		Pittsburg .....	91.50		

**DATES OF SALE:**  
May 16, 17, 18, 19, 22, 23, 24, 25, 27, 28, 29  
June 5, 7, 9, 10, 12, 16, 17, 21, 22, 23, 24, 28, 29, 30  
July 1, 2, 3, 4, 5, 6, 19, 20, 26, 27, 28  
August 3, 4, 5, 14, 15, 16, 17, 21, 22, 23, 28, 29, 30  
September 1, 2, 4, 5, 6, 7

All tickets bear final return limit of October 31, 1911.  
Liberal stop-over privileges permitted.  
Choice of routes.  
Sleeping car service to principal centers.

Tickets will be sold at proportionately reduced fares to many other destinations in the East in addition to those named. Return may be made through California at slightly higher fares.

Ask or write nearest O-W. R. & N. Agent for details, or write to  
WM. McMURRAY, General Passenger Agent, Portland, Oregon

## \$250.00 Secures Five Acres and Sixty Monthly Installments of \$37.50 Make Them Yours in THE HEART OF HOOD RIVER VALLEY

You have had many chances to buy apple orchards on the installment plan, but **THE CENTRAL ORCHARD TRACTS** are the first ever offered in **HOOD RIVER VALLEY PROPER** on the easy-payment plan. You will not be financing a doubtful experiment, but buying the best land in Hood River Valley.

The tracts will be planted and cared for during a period of five years, on the terms outlined. For particulars and plats address.

**CENTRAL ORCHARDS COMPANY, Hood River, Oregon**

C. R. Bone, President

C. H. Sproat, Vice President

E. O. Blanchar, Secretary.

Our references: Everybody who knows us

## We Own and Have for Sale 1000 Acres of Willamette Valley Non-Irrigated Fruit Land

The A. C.  
Bohrnstedt Co.  
917 Andrus Building  
Minneapolis, Minn.

Gentlemen: Please send me your  
Willamette Valley Orchard Homes  
booklet. I have about \$.....  
to invest. Would like about.....  
acres.

Name .....  
Address .....

COUPON

This is being sold in tracts of five, ten and twenty acres and upwards. We care for the orchards under the supervision of scientific horticulturists until the end of the fifth year development period.

**THE A. C. BOHRNSTEDT COMPANY**  
917 Andrus Building, Minneapolis, Minnesota

Branch Offices: 304 U. S. National Bank Building,  
Salem; Creswell, and Macleay, Oregon

# STANDARDIZING FRUIT—GROWING AND SHIPPING

ADDRESS BY W. C. WALKER, OF PIONEER FRUIT COMPANY, AT WESTERN FRUIT JOBBERS' CONVENTION, SACRAMENTO, CALIFORNIA

IT CAN safely be said that the fruit industry has been a matter of epochs—first, the growing epoch; This, when it was learned that the California soil and climate were particularly adapted to the growing of fruits of almost every known clime. The quantity, however, became so great that the question of selling became a serious matter in order to work out of the fruit the "sinews of war" necessary to make the industry commercially possible. This led to organization, which has branched in many directions. These organizations have gradually developed what might be termed the marketing epoch. The shipping companies and other organizations found from experience that it was necessary to have well controlled avenues to market so as to avoid unnecessary and disastrous competition. Through these avenues it became very apparent there was still another question that developed remarkably as the industry became greater, and that question was one that could safely be considered outside the field of competition. Fortunately the growers themselves—the original owners of the fruit—were of a like frame of mind with that of the commercial factors, and between them opened up last year what might be properly called the standardization epoch. The results of the first year's operation have been very gratifying. While the scheme was entered

into with fear and trembling the year has wound up with the banners flying. Even the most skeptical have become convinced that standardization is going to mean as much in the development of markets as anything that has happened in the fruit business outside of organization work.

It can be said that organization and standardization practically go hand in hand. Were it not for organization of local committees in each respective county the scheme could not have been launched successfully. Of course, there were several mistakes made, and we all realized that we would encounter some snags. But fortunately all recognized that it was a new venture and were willing to be patient, fair and considerate, and let the little aggravations of the first year be jotted down in the experience book, to be taken up at the deliberations in the near future.

I have been actively engaged in the marketing of standardized fruit, and have watched the same very closely because I had faith in the quality of the California product if the trashy fruit were eliminated and kept at home. I have known for a long time, from Eastern experience as well as Coast, there is only one basis on which California can control the market, and that is quality. Of course, we have many varieties that will always find a market because no other section of the United States pro-

duces them, but these are not our biggest factors. The varieties that return the largest amount of money to Northern California are apples, peaches, pears, plums and grapes. We encounter these in many states, especially peaches. Consequently considerable attention has been devoted to perfecting the peach pack. Last summer it was a source of great satisfaction to be able to look over the manifest of a car and tell to a nicety just what it contained in the matter of sizes. When a customer would call for a car running heavy to a certain size peach we could offer it with very little delay, whereas heretofore it has been almost like a leap in the dark. In turn, this season the buyer of a car, promptly on having the car confirmed to him, could give his salesmen instructions to sell so many boxes of a certain size and was sure to deliver just what he had sold. When the car arrived at its destination it was a comparatively easy matter to sort into sizes and distribute in a very short time, whereas heretofore it has been a question of opening up almost every box to find if the peaches were large or small. While this may not seem much of a factor in California, in the Eastern markets, where time is so precious, it has meant the difference between immediate handling and delayed handling of the produce. It also developed this season if peaches were too small size to pack a satisfactory

## COOPER'S SPRAY FLUIDS

**Read what Hood River says**

Hood River, Oregon, Nov. 27, 1909.  
This is to certify that I have used Cooper's Tree Spray Fluids, V1, for killing San Jose scale and found it very effectual.  
G. R. Castner, County Fruit Inspector.

**APTERITE  
THE SOIL FUMIGANT**  
DESTROYS INSECTS IN THE GROUND  
REDUCES LOSSES SAVES PROFITS  
IT WILL PAY YOU TO INVESTIGATE  
Write for 1910 booklet (32 pages)  
Testimony from fruit growers everywhere

Agent:  
**C. G. ROBERTS**  
247 Ash Street Portland, Oregon  
Sole Manufacturers:  
**William Cooper & Nephews**  
CHICAGO, ILLINOIS

Specimen of  
**CALIFORNIA SOUVENIR CALENDAR**  
2ND EDITION  
Size 9x27  
LITHOGRAPHED BY US  
IN 9 COLORS

Mailed to any address in USA or Canada for 10¢ in stamps

**O. E. OLSEN LITHOGRAPH CO.**  
FRUIT LABELS  
330 JACKSON ST. SAN FRANCISCO

1911 MARCH 1911

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	

**O. E. OLSEN LITHOGRAPH CO.**  
330 JACKSON ST. SAN FRANCISCO

APPLE BOX LABELS  
PEAR  
PEACH ETC.

WRITE FOR SAMPLE LABELS



WE MAKE 200 DIFFERENT SIZES.  
SUITABLE FOR EVERY PURPOSE

### THE BRAND "J. C. PEARSON CO."

On a keg of Cement Coated Nails stands for the best nails for any purpose.

They are almost universally used for fruit boxes.

They drive easier, hold tighter and cost less than the uncoated or barbed nails.

There are imitations on the market. BEWARE! Always specify

**PEARSON'S**

Made only by

**J. C. Pearson Co.**  
Boston, Massachusetts

**A. C. RULOFSON CO.**  
315 Monadnock Building, San Francisco  
Pacific Coast Sales Agents

P. S.—By sending 4 cents in stamps to our San Francisco office, to cover the postage, we will send free a "PEARSON" Nail Puzzle, a novelty that will afford considerable amusement.

two-tier pack they could be packed three-tier, and a certain trade was always willing to buy three-tier peaches at a commensurate price, whereas before a two-tier pack of too small peaches meant rejection, and frequently nothing in return, often not sufficient to pay the charges. This led to more peaches being packed in crates when they ran below a certain size. Of course, crate pack has been put up for many years, but I believe there have been fewer complaints from the f. o. b. trade on peaches packed in crates than in former years, chiefly due to the fact that there was no deception, as it was well known that peaches packed in crates were of good quality, but small. I am not trying to urge the packing of peaches in crates, except on certain varieties which go to auction, for the reason that the Western trade like the peaches put up in the California boxes because they can be re-shipped and handled easier, and with less danger of the facing being disturbed and the pack being called slack and poor.

In plum packing we have unquestionably made great strides. In fact if it were not for standardization in Placer

County the market would have been surfeited with small-sized, unmarketable Burbank plums, put up in the old style three-tier pack, whereas this year it was a blessing to have a lot of this fruit kept at home, and thus make way for the fruit that was fit. In turn this developed the permanent place for a four-tier pack of small plums. We found many markets that will pay as much for a small plum packed four tier as they will for a reasonably good sized plum packed three tier, for the reason there is a certain class of fruit stand trade that can use a small plum very profitably. The same applies to prunes.

On the question of pear packing California has always stood pretty well. The main advantage this year was that wormy stock was kept at home, and gnarly fruit was also tabooed. In fact a certain section that was always looked upon as having second-class Bartlett pears this year outsold all the other sections, and I think it was almost entirely due to the fact that that section accepted standardization and the other two main sections did not accept the rulings, with the result that the plan

proved itself in the pears more than in anything else in showing the relative advantages. I believe in another season that sections like the Sacramento River and Suisun would be many dollars ahead if they were to accept some form of standardization, so as to keep at home the shipments of under-sized and immature stock that never colors or ripens, and becomes a stumbling block for the better quality that is shipped about a week later. If first class Bartlett pears were marketed from the beginning we couldn't begin to supply the demand, but the trouble is that a few early cars are put on the market, the buyer obtains a small supply at a big price, the fruit never colors and becomes the worst kind of a drug in the store, so much so that he will not put in a stock of the later arrivals, and thus forces the market down through lack of demand. The grower actually suffers more through obtaining a good price on the first few cars and a low price on the great many cars following than if he were to keep his product on the trees until the fruit was riper and more fit for human consumption. This is a very important question, because in the Bartlett pear Northern California has an asset that is very great indeed, and by the proper handling this variety can be made one of the greatest money makers in the business. There is almost no limit to the marketing possibilities of Bartlett pears if put up in the right way. The California Bartlett is known in the United States, Canada and Mexico as standing in a class by itself. It is one of the few fruits that ripen to a greater state of perfection off the tree than on, so that when eating a California Bartlett pear the consumer enjoys something that cannot be equalled for lusciousness. A little attention to this question would return vastly more than the outlay of time and money.

Grapes—In the packing of grapes we are really somewhat in an experimental stage. It is generally admitted that we have a receptacle that is not conducive to the best carrying of our product. It is a problem as to the direction in which we should bend our efforts for a package to take the place of the present one. The experiments as carried on at Lodi by the United States Department of Agriculture have shown almost conclusively that the so-called commercial pack is not good for the product. It develops decay because the fruit is injured through pressing and crowding, the bloom is rubbed off and ventilation is seriously interfered with. I believe that in handling the product of a great vineyard a new method will have to be adopted to make a satisfactory pack. I believe that the tendency is rapidly developing in the direction of a centralized or house pack, the same as in the orange and apple business. I believe in time the home pack will almost entirely disappear, except in sections where the vineyards are comparatively small and the farmer, with his family, is able to handle most of the product. Where one has to depend on outside help it will be necessary to centralize the pack so as

## FRUIT GROWERS, YOUR ATTENTION!

Royal Ann, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Comice pears, and other varieties of fruit trees.

**A. HOLADAY**

MONTE VISTA NURSERY  
SCAPPOOSE, OREGON

## STUMP DESTROYER

Send and get our formula and method for destroying stumps. Cheap, simple and effective. Price \$5.00.

**VOLL & BARKER, Chemists**

411-412 Marion Building, Seattle, Washington

## Crop Specialist Tells How To Make Your Land Pay \$500 to \$1200 Per Acre



Price 50c.

That may sound like a story—but I am here to tell, to show and to prove that a profit of from \$500 to \$1,200 per acre is within the reach of every farmer or grower in the country. I have made this remarkable record on my farms for several years—other farmers who have adopted my methods are also succeeding—the same success is within your reach. The secret of this wonderful profit is scientific and intensive farming, special preparation of soil and the growing of special crops.

### Write For My Two Free Books

Book No. 1 is my intensive farming book, not a catalog, published to sell for 50c; send and get it now free; tells of my experiments and experience for the last 32 years. It has taken 32 years to write and to complete it. If you will at least spend 32 minutes reading it it will prove to be the most profitable time you ever spent. This book explains my special method of soil preparation, how to rotate crops, how to make your land pay big profits as I have done by growing my Grandpa's Pride Globe Onions which have produced an average profit of \$15,000 on 40 acres and other special crops.

Book No. 2 gives the history of the Alton Improved Red Raspberry which has produced an average profit of \$1,200 per acre on account of its remarkable size, flavor, long fruiting season and vitality.

Write for my books today, they are free and will interest the man who is looking for big profits.

**A. O. GILBERTSON, CROP SPECIALIST,**  
Box 620  
Mason City, Iowa.

### I Have Farmed For 32 Years

During this time I have experimented, my one aim was to produce special crops that would be out of the ordinary in quality and profit. One of the most successful experiments was with raspberries. Instead of growing the ordinary variety and taking an ordinary profit I propagated a special variety now known as the Alton Improved Red Raspberry that has stood the winters of Northern Minnesota, North and South Dakota and even as far north as Canada, without the least winter protection. The berry is especially remarkable for its size and delicious flavor as well as for its long fruiting season, which on an average extends over a period of three months. If you only have a city lot or if you have a farm investigate this wonderful, large, delicious berry now.

to get the highest efficiency on the pack itself and the closest kind of unbiased supervision as to what should go into the package. The grape business has unquestionably been seriously interfered with by poor packing, and I believe that the committee at Lodi, also other sections, where house pack is rapidly coming into favor, would do well to spend part of the fund on experimental work—developing a new style package.

This season the writer personally examined quite a few thirty-pound lug boxes of Tokays in Portland and other cities, and found that the fruit shipped in the thirty-pound lug boxes showed up in excellent shape, much better than the same fruit packed in the ordinary crate, but the trade was not educated up to the package and were not altogether in favor of it because it did not make an ideal re-shipping package, a feature that has to be carefully considered. A great proportion of the California fruit is re-shipped into small towns after it is unloaded from the car, and it is necessary to have a snug package, and one that is easy and safe to handle.

Markings—I believe that we should have a uniform system of marking for each variety of fruit. I do not believe that Placer County should have one system, Solano, Yolo and Fresno Counties each another, as it is confusing to the buyers. I was told when East that the marking, such as "Not over 72 peaches," was disliked for the reason that many of the buyers are foreigners, who are not familiar with the English language, and although they understood the figures "72" or "84," or whatever numbers might be on the box, they did not read the English words surrounding it to the effect that the box contained that number and larger, and when they would buy ten or fifteen packages and find some 84s, some 72s and some even larger, there was an immediate howl and claim that the grower was trying to fool them. The marking that seemed to be most in favor was the system that prevails in the dried prune business, that is "60 to 70," "80 to 90," etc.; then the buyer would have no doubt in his mind as to the approximate number of pieces of fruit in the box. A great proportion of our

CAPITAL STOCK \$100,000 SURPLUS \$22,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, *President*  
J. W. HINRICHS, *Vice President*  
E. O. BLANCHAR, *Cashier*  
V. C. BROCK, *Assistant Cashier*

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Thorough and Conservative

Assets over \$500,000

Savings Bank in connection

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

HOOD RIVER BANKING AND TRUST COMPANY  
HOOD RIVER, OREGON

LESLIE BUTLER, *President*  
F. McKERCHER, *Vice President*  
TRUMAN BUTLER, *Cashier*

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid \$50,000 Surplus and Profits over \$50,000

INTEREST PAID ON TIME DEPOSITS

We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

A Reputation to Sustain

## Vineland Nurseries Company

Clarkston, Washington

PROPAGATORS OF

Reliable Nursery Stock

All stock budded from bearing trees,  
fruit and ornamental

## LADD & TILTON BANK

Established 1859

Oldest bank on the Pacific Coast

PORTLAND, OREGON

Capital fully paid - - - - - \$1,000,000

Surplus and undivided profits - - - - - \$600,000

W. M. Ladd, *President*  
Edward Cookingham, *Vice President*  
W. H. Dunkley, *Cashier*

Officers:

R. S. Howard, Jr., *Assistant Cashier*  
J. W. Ladd, *Assistant Cashier*  
Walter M. Cook, *Assistant Cashier*

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

## ASHLAND DISTRICT of the ROGUE RIVER VALLEY

Orchards near the City of Ashland, Oregon, hold the highest records for productiveness per acre, in comparison with all the other orchard localities of similar size.

A booklet descriptive of the many resources of this city and the surrounding country will be sent free on applying to the Publicity Department of the Ashland Commercial Club, Ashland, Oregon.



fruit is afterwards sold by the dozen, and the small buyer can figure approximately the number of dozens he can get out of a certain size package, and will offer them for sale at his stand at the same ratio. On plums I would recommend that all districts adopt a plan of showing the number of tiers and the size, such as 3x4s three-tier, 4x5s three-tier, etc. This will show the purchaser the number of pieces he can expect in the top layer and the number of tiers in the crate, and he can figure up very quickly about how many dozens he can get from a certain package. As it requires some skill to make the proper kind of a plum pack, and frequently plums do not run uniformly, I believe an attempt to mark the number of pieces on a crate is a mistake. The trade would prefer to have it shown, as I have previously stated. The same applies to apricots.

On pear packing I believe the most acceptable method would be the tier mark. The trade is not so particular about knowing whether a box contains an exact number of pears, but they want to know whether it is a four, five or six-tier pack.

On grape packing I believe the package should state whether it is two basket, four basket or six basket and the style of pack, and whether it is paling or bunch.

Cherries—I believe the row pack is preferable, and the counting should be done on the end, and not on the side, so as to make the marking and counting more uniform. Some districts have a plan of counting the number of rows on the side, and it works against them for the reason that they lose about a row, because a ten-row on the front is about eleven rows on the side, and the trade buying for shipment is particular in

## THE TOOL that SAVES a TOOL

### What Prof. Bailey Says

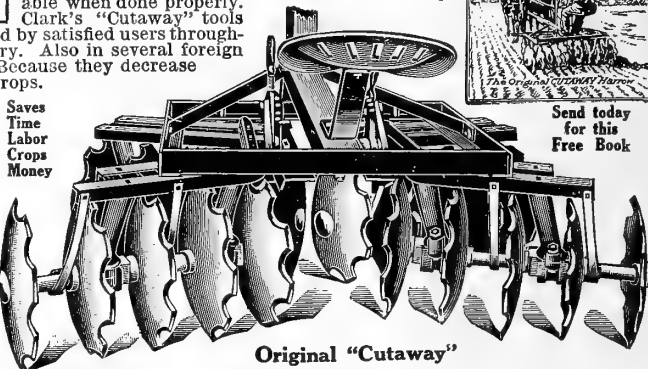
"The Double Action 'Cutaway' Harrow has been satisfactory. I use it almost continuously on our hard clay land with good results."

are used and endorsed by satisfied users throughout this entire country. Also in several foreign countries. Why? Because they decrease labor and increase crops.

Our disks are made of cutlery steel shaped and sharpened in our own shops and are the only genuine "Cutaway" disks.

Beware of imitations and infringements. We make a tool for every crop. If your dealer can't supply the genuine "Cutaway," write us your needs. Satisfaction guaranteed. Prompt shipments. Send a postal today for our new catalogue "Intensive Cultivation." It's Free.

Why buy two tools when one will do two kinds of work and do it better and easier? Clark's original "Cutaway" Harrow can be used as a field harrow and its extension head frame converts it into an orchard harrow. Drawn by two medium horses and will cut 28 to 30 acres or double cut 15 acres in a day. The genuine "Cutaway" disk slices, stirs, lifts, twists and aerates the soil. Working the soil this way lets in the air, sunshine and new life and kills foul vegetation. Thorough cultivation makes large crops. Successful farmers, orchardists, gardeners and planters know that intensive cultivation is profitable when done properly.



**CUTAWAY HARROW CO., 940 MAIN STREET, HIGGANUM, CONN.**  
**Mitchell, Lewis & Staver Co., Western Agents, Portland, Oregon**

regard to the markings on cherries, and they willingly pay more for a ten-row cherry than an eleven-row, and the grower might just as well get the benefit. I believe that we should make a difference in the price on our large sized fruit as against the small sizes, just the same as in the orange business. Of course, this was not done in the season just past, except in a very few instances, because the new system was not gener-

ally understood. It would have been a mistake to try and bring about too many changes at one time. I think this coming season we should consistently try to make a difference in price on the large as against the small sized fruit, so that the grower who has the more desirable sizes can obtain the benefit of the market, and this will encourage more care in selecting. I would also recommend and strongly urge that all districts wheel into line on the question of standardizing. One non-standardizing district shipping poor fruit will undo the good of many districts shipping standardized fruit. As an example, a car of poor fruit will be rejected, a low price made on it and immediately the wires flash the news that the market has been cut, whereas the market in general has not been cut, but a lower price made to dispose of the poor car, but many unscrupulous buyers take advantage of the situation and give out the impression generally that the market has gone to pieces, etc. The districts that have adopted standardization would do well to keep up the agitation in the districts that have not done so as a matter of self-protection and advancement of the business.

In concluding I wish to say that I do not believe the cost amounts to anything as compared with the results obtained, and I hope that this winter will see many meetings called for the sole purpose of adopting and improving plans for standardization. Northern California will then be making for all time an industry that is not only pleasant to follow, but profitable in its outcome. This question is of immense importance to all of us, and I hope the plan of standardization will be adopted throughout the entire deciduous belt.



## Milk Cans That Wear

Milk Cans made of tinned steel plate. The kind that are inspected after every operation while in process of manufacture. The kind that stand the wear and tear and give satisfaction—the best. We are agents for both the **STURGES** and the **BUHL MILK CANS** because these makes are known to make good.

Send for special booklet.

**MUNROE & CRISELL**

Selling Agents

Portland, Oregon



## SURPLUS STOCK

We have the following stock in good grades at prices that will please you:

### APPLE

Baldwin, Bismarck, Black Ben, Delicious, Fall Wine, Gano, Grimes Golden, Hyde King, Jonathan, King David, Ingram, McIntosh Red, Nonesuch, Red June, Rome Beauty, Spitzenberg, Stayman Winesap, Wagener, Whitney, Winesap, Yellow Bellflower, Yellow Newtown and Yellow Transparent.

### PEAR

Anjou, Bartlett, Comice, Idaho and Winter Nelis.

### PEACH

Carmen, Champion, Cox Cling, Crawford Early, Crawford Late, Early Charlotte, Elberta, Engalls Mammoth, Fitzgerald, Foreman, Guin, Muir, November, Orange Cling, Phillips Cling, Salway, Slappy, Smock, Triumph and Tuscan Cling.

### CHERRY

Bing, Black Tartarian, Early Richmond, Eng. Morrill, Lambert, Late Duke, Oxheart, Royal Ann and Yellow Spanish.

### PLUM

Bradshaw, Burbank, Damson, Diamond, Grand Duke, Green Gage, Maynard, Wild Goose, Macy and Yellow Egg.

### PRUNE

Italian, Petite, Silver and Tragedy.

### APRICOT

Golden, Moorpark, Peach, Tilton and Yakimini.

### NECTARINE

New White and Boston.

### NUT TREES

English Walnut, Almond, etc.

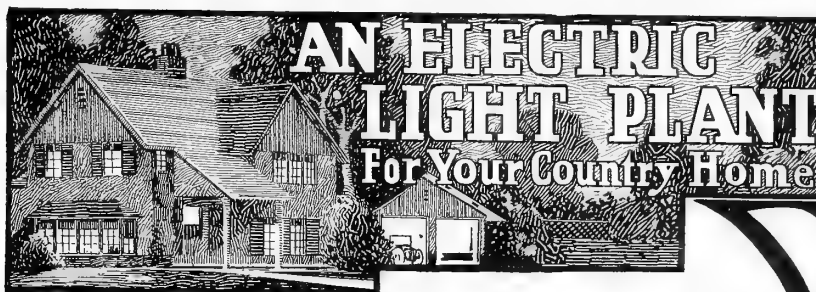
### ORNAMENTAL

Catalpa, Black Locust, Mountain Ash, American Elm, Norway and Silver Maple, Mulberry and Norway Spruce.

All the above stock clean, hardy and true to name. Write for special spring prices.

**THE SUNNYSIDE NURSERY COMPANY**

SUNNYSIDE, WASHINGTON



## AN ELECTRIC LIGHT PLANT For Your Country Home

### COMPLETE ELECTRIC LIGHT OUTFITS

8, 15 and 30 Lamps.

Combination Dynamo-Storage Battery Type

Especially designed for the electric lighting of ranches, country homes, stables and factories. While common coal oil lamps, acetylene systems and gasoline lamps sometimes explode, this electric outfit positively cannot explode. The force of current is so harmless you cannot even feel the current.

## Make Your Own Electricity

With this system you generate electric current by the means of a small gasoline engine driving a dynamo or generator during the day. The current is run into a storage battery. Charging of the storage battery is done once or twice a week, or whenever the engine is being run for other work.

No skilled electrician needed to install or attend. Automatic switchboard. Pure white 16-candle-power light. Guaranteed. Inexpensive—first cost as well as upkeep.

SEND FOR BOOKLET A

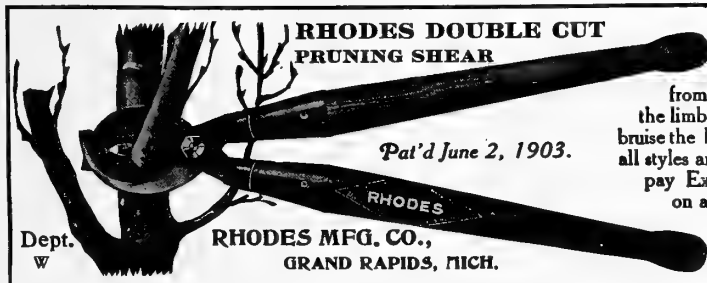
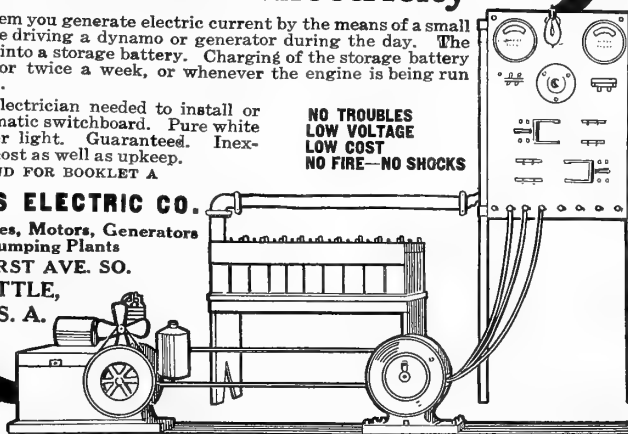
NO TROUBLES  
LOW VOLTAGE  
LOW COST  
NO FIRE—NO SHOCKS

### REYNOLDS ELECTRIC CO.

Gas Engines, Motors, Generators  
Pumping Plants

522 FIRST AVE. SO.

SEATTLE,  
U. S. A.



### RHODES DOUBLE CUT PRUNING SHEAR

Pat'd June 2, 1903.

RHODES MFG. CO.,  
GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. We pay Express charges on all orders. Write for circular and prices.

## Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

## LUMBER

Lath, Shingles, Wood, Etc.

HOOD RIVER, OREGON

C. M. SHAW

ROY F. DEAN

## Dean & Shaw

Electrical Supplies and Fixtures

Scientific Electrical Construction

Home Phone 3 Hood River, Oregon

GET CATALOG AND PRICE LIST  
420 Acres Devoted to Nursery Purposes

## THE WOODBURN NURSERIES

Established 1863 by J. H. Settlemier

Grower of Choice

## NURSERY STOCK

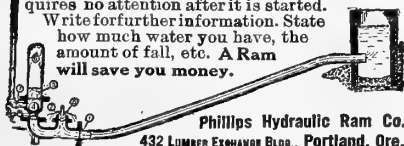
F. W. SETTLEMIER

Woodburn, Oregon

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## PUMPS WATER

for your Home, your Stock, or for Irrigation, without care or adjustment. No springs; no weights. Does not even have to be oiled. The Phillips Hydraulic Ram—Simple in construction—nothing to get out of order. Pumps a large amount of water to a low height or a small amount to a greater height. Requires no attention after it is started. Write for further information. State how much water you have, the amount of fall, etc. A Ram will save you money.



Phillips Hydraulic Ram Co.  
432 LUMBER EXCHANGE BLDG., PORTLAND, ORE.

## HARVEY BOLSTER SPRINGS

Soon save their cost. Make every wagon a spring wagon, therefore fruit, vegetables, eggs, etc., bring more money. Ask for special proposition. Harvey Spring Co. 174 11th St., Racine, Wis.



FREE TRIAL TO YOU



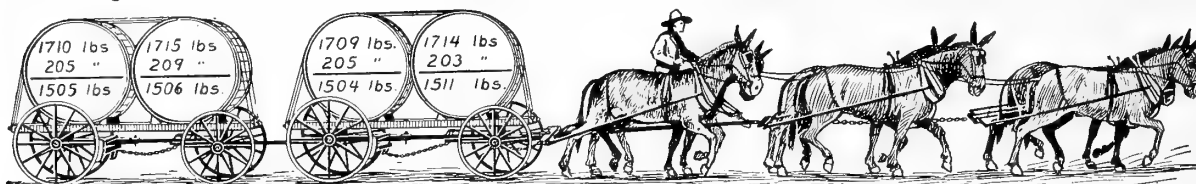
### LILLY'S BEST BEE SUPPLIES

Are standard—the best to be had for money-making purposes. We are Agents for Lewis Bee Ware. Send for Catalog. Most authoritative Bee Book issued, 84 pages of definite information. Illustrated.

**The Chas. H. Lilly Co. Seattle.**

In the March "Better Fruit" we submitted you some of the "Expert Testimony" received; we now give you some practical illustrations of the further advantages of

# "BLACK LEAF 40"



**NICOTINE YIELD**, about 42 pounds. Sufficient to make 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." Under the "home-made" process, **no uniformity** could be counted upon.

2. "Progress": Hauling twenty-eight five-gallon cans of "Black Leaf" Tobacco Extract to the ranch.

3. "The Latest": Taking one case (ten tins) of "Black Leaf 40" to the ranch.



**Total weight** about 1,750 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**



**Total weight** about 160 pounds. **NICOTINE YIELD** about 42 pounds.

Makes 10,000 gallons of wash " $\frac{5}{100}$  of 1 per cent Nicotine." **Uniform strength guaranteed.**

Owing to the large dilution, neither foliage nor fruit is stained. Like our "Black Leaf" Extract, "Black Leaf 40" may be applied when trees are in full bloom and foliage, without damage to either. Also, "Black Leaf 40" is perfectly soluble in water—no clogging of nozzles.

**PRICE:** { 10½-lb. can, \$12.50, makes 1000 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
2½-lb. can, 3.25, makes 240 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"  
½-lb. can, .85, makes 47 gallons, containing " $\frac{5}{100}$  of 1 per cent Nicotine"

These prices prevail at **ALL** agencies in railroad towns throughout the United States. If you cannot thus obtain "Black Leaf 40," send us postoffice money order and we will ship you by express, prepaid.

**The Kentucky Tobacco Product Company (Incorporated), Louisville, Kentucky**

## NORTHWEST GROWERS' UNIONS AND ASSOCIATIONS

**WE** publish free in this column the name of any fruit growers' organization. Secretaries are requested to furnish particulars for publication.

### Oregon

Eugene Fruit Growers' Association, Eugene; Ashland Fruit and Produce Association, Ashland; Hood River Fruit Growers' Union, Hood River; Hood River Apple Growers' Union, Hood River; Grand Ronde Valley Fruit Growers' Union, La Grande; Milton Fruit Growers' Union, Milton; Douglas County Fruit Growers' Association, Roseburg; Willamette Valley Prune Association, Salem; Mosier Fruit Growers' Association, Mosier; The Dalles Fruit Growers' Union, The Dalles; Salem Fruit Union, Salem; Albany Fruit Growers' Union, Albany; Coos Bay Fruit Growers' Association, Marshfield; Estacada Fruit Growers' Association, Estacada; Umpqua Valley Fruit Growers' Association, Myrtle Creek; Hyland Fruit Growers of Yamhill County, Sheridan; Newburg Apple Growers' Association, Newburg; Dufur Valley Fruit Growers' Union, Dufur; McMinnville Fruit Growers' Association, McMinnville; Coquille Valley Fruit Growers' Union, Myrtle Point; Stanfield Fruit Growers' Association, Stanfield; Oregon City Fruit and Produce Association, Oregon City; Lincoln County Fruit Growers' Union, Toledo; Rogue River Fruit and Produce Association, Medford; Mount Hood Fruit Growers' Association, Sandy; Northeast Gaston Farmers' Association, Forest Grove; Dallas Fruit Growers' Association, Dallas; Northwest Fruit Exchange, Portland; Springbrook Fruit Growers' Union, Springbrook.

### Washington

Kennewick Fruit Growers' Association, Kennewick; Wenatchee Fruit Growers' Union, Wenatchee; Puyallup and Sumner Fruit Growers' Association, Puyallup; Vashon Island Fruit Growers' Association, Vashon; Mt. Vernon Fruit Growers' Association, Mt. Vernon; White Salmon Fruit Growers' Union, White Salmon; Thurston County Fruit Growers' Union, Tumwater; Bay Island Fruit Growers' Association, Tacoma; Whatcom County Fruit Growers' Association, Curtis; Yakima Valley Fruit and Produce Growers' Association, Granger; Buckley Fruit Growers' Association, Buckley; Lewis River Fruit Growers' Union, Woodland; Yakima County Horticultural Union, North Yakima; Evergreen Fruit Growers' Association, R8, Spokane; White River Valley Fruit

and Berry Growers' Association, Kent; Spokane Highland Fruit Growers' Association, Shannan; Lake Chelan Fruit Growers' Association, Chelan; Zillah Fruit Growers' Association, Toppenish; Kiona Fruit Growers' Union, Kiona; Mason County Fruit Growers' Association, Shelton; Clarkston Fruit Growers' Association, Clarkston; Prosser Fruit Growers' Association, Prosser; Walla Walla Fruit and Vegetable Union, Walla Walla; The Ridgefield Fruit Growers' Association, Ridgefield; The Felida Prune Growers' Association, Vancouver; Grand View Fruit Growers' Association, Grandview; Spokane Valley Fruit Growers' Company, Spokane; Goldendale Apple Growers' Union, Goldendale; Yakima Valley Fruit Growers' Association, North Yakima; Southwest Washington Fruit Growers' Association, Chehalis; The Touchet Valley Fruit and Produce Union, Dayton; Lewis County Fruit Growers' Association, Centralia; The Green Bluffs Fruit Growers' Association, Mead; Garfield Fruit Growers' Union, Garfield.

### Idaho

Southern Idaho Fruit Shippers' Association, Boise; New Plymouth Fruit Growers' Association, New Plymouth; Payette Valley Apple Growers' Union, Payette; Parma-Roswell Fruit Growers' Association, Parma; Weiser Fruit and Produce Growers' Association, Weiser; Council Valley Fruit Growers' Association, Council; Nampa Fruit Growers' Association, Nampa; Lewiston Orchard Producers' Association, Lewiston; Boise Valley Fruit Growers' Association, Boise; Caldwell Fruit Growers' Association, Caldwell; Emmett Fruit Growers' Association, Emmett; Twin Falls Fruit Growers' Association, Twin Falls; Weiser River Fruit Growers' Association, Weiser.

### Colorado

San Juan Fruit and Produce Growers' Association, Durango; Fremont County Fruit Growers' Association, Canon City; Rocky Ford Melon Growers' Association, Rocky Ford; Plateau and Debeque Fruit, Honey and Produce Association, Debeque; The Producers' Association, Debeque; Surface Creek Fruit Growers' Association, Austin; Longmont Produce Exchange, Longmont; Manzanola Fruit Association, Manzanola; Delta County Fruit Growers' Association, Delta; Boulder County Fruit Growers' Association, Boulder; Fort Collins Beet Growers' Association, Fort Collins; La Junta Melon and Produce Company, La Junta; Rifle Fruit and Produce Association, Rifle; North Fork Fruit Growers' Association, Paonia; Fruita Fruit

and Produce Association, Fruita; Grand Junction Fruit Growers' Association, Clifton; Palisade, Grand Junction; Palisade Fruit Growers' Association, Palisade; Peach Growers' Association, Palisade; Colorado Fruit and Commercial Company, Grand Junction; Montrose Fruit and Produce Association, Montrose; Hotchkiss Fruit Growers' Association, Hotchkiss; Paonia Fruit Exchange, Paonia; Colorado Fruit Growers' Association, Delta; Crawford Fruit Growers' Association, Crawford; Manzanola Fruit Growers' Association, Manzanola.

### Montana

Bitter Root Fruit Growers' Association, Hamilton.

### Utah

Farmers and Fruit Growers' Forwarding Association, Centerville; Ogden Fruit Growers' Association, Ogden; Brigham City Fruit Growers' Association, Brigham City; Utah County Fruit & Produce Association, Provo; Willard Fruit Growers' Association, Willard; Excelsior Fruit & Produce Association, Clearfield (Postoffice Layton R. F. D.); Centerville Fruit Growers' Association, Centerville; Bear River Valley Fruit Growers' Association, Bear River City; Springville Fruit Growers' Association, Springville; Cache Valley Fruit Growers' Association, Wellsville; Green River Fruit Growers' Association, Green River.

### British Columbia

Peachland Fruit Growers' Association, Limited, Peachland; British Columbia Fruit Growers' Association, Ladner; British Columbia Fruit Growers' Association, Victoria; Victoria Fruit Exchange, Victoria; Hammond Fruit Association, Hammond; Western Fruit Growers' Association, Mission; Mission City Fruit Growers' Association, Mission; Hatzic Fruit Growers' Association, Hatzic; Farmers' Exchange, Salmon Arm; Okanagan Fruit Union, Limited, Vernon; Farmers' Exchange, Kelowna; Kootenay Fruit Union, Limited, Nelson; Grand Forks Fruit Growers' Association, Grand Forks; Creston Fruit and Produce Exchange, Creston; Kaslo Fruit Growers' Association, Kaslo; Summerland Fruit Growers' Association, Summerland.

**THE J. C. PEARSON CO.**, "The Cement Coated Nail People," office No. 315 Monadnock Building, San Francisco, California, have gotten out a unique and interesting Nail Puzzle, which they are distributing gratis to those who ask for them. Send a postal card to the above address and the Pearson people will do the rest.

## THE FEEDING OF THE GARDEN SOIL A NECESSITY

A VARIETY of plants with a variety of plant food requirements are grown in the garden. To meet the growing needs of all these different plants many different kinds of fertilizers must be used on the garden soil. The garden gives large yields in proportion to the area cultivated, and no labor or means should be spared to make it yield in abundance.

We like to begin to fertilize our garden soil early in the winter, in fact just as soon as the crops are harvested in the late summer and fall. Small amounts of

trash and manure accumulate about the buildings and grounds. These amounts, when raked up and collected, are too small to pay for hitching up to the wagon and hauling to the fields, hence we use the shovel and wheelbarrow and get this stuff on the garden as fast as it is formed. The ashes from our wood stoves are removed at frequent intervals and placed about the base of the grapevines, bush fruits and larger fruit trees. The winter and spring rains leach out the easily soluble potash and other mineral elements of the ashes and carry them to the roots

of the fruit trees, bushes and vines for early feeding when spring growth begins. Wash water and other soapy slops are poured on the vegetable garden, the small fruit patch and on the flower beds. It is true these slops do not contain large amounts of fertilizing elements, but they must be disposed of in some way, and it is better to save them for fertilizing food and flower crops than to throw them out in the back yard anywhere, or to allow them to run away through the underground drain pipe. The dirt and waste about the dwelling can be utilized in the garden soil better than in any other way, and in a few

years the fertilization amounts to considerable. About twice each week the cow lot is cleaned with the rake and shovel, and the scrapings, amounting to some half a dozen wheelbarrow loads, are removed to the garden and dumped in piles. By spring gardening time these small piles are decomposed and in fine condition for working into the soil, either for the vegetable or for the flower beds. Cow manure is mild and safe to use with the tenderest of plants, as very little heat is given off in decomposition. That which has remained in small heaps over winter in the garden works up in spring as fine as the finest garden loam, and is one of the best all around garden fertilizers that can be used.

The droppings from the poultry houses are cleaned out regularly during the winter and either applied direct to the garden soil or mixed with the stable manure and applied with it. As poultry manure is very strong, it should be applied thinly over the surface. A little of it will go a long way. Where coal ashes or other similar absorbing material is used with the droppings there is less danger of overfertilizing the soil with them. The ashes absorb and hold fertilizing elements, and when they are worked into the soil they give up these fertilizers as plant foods and at the same time improve the texture of the soil, making it light, friable and easy to work. Absorbing material should always be used with poultry droppings, since it keeps the poultry house more sanitary and almost doubles the value of the manure.

Where not enough refuse about the home can be had to properly fertilize the garden during the winter we use the manure from any of the animal stables. In spring all the coarsest portion is raked off and hauled to the fields.—California Cultivator.

# The PACIFIC MONTHLY

has just closed the most successful and prosperous year in its history. We want to make 1911 even more successful than the year just passed. We want *your* name upon our subscription list. Here are a few facts which will help you to decide the question of subscribing,

¶ The Pacific Monthly is recognized as the most successful independent magazine in the West. It publishes each month artistic and unusual duotone illustrations of beautiful Western scenery, studies of Indian heads, or of animal life, ranging from Alaska, on the North, to Mexico on the South, and as far afield as Japan and the South Seas. From its striking cover design to the last page you will find a feast of beautiful pictures.

¶ Each month it publishes from five or six short stories by such authors as Jack London, Stewart Edward White, Harvey Wickham, D. E. Dermody, Seumas MacManus, Fred. R. Bechdolt, and other well known writers of short stories. Its stories are clean, wholesome and readable.

¶ Each month one or more strong articles are published by such writers as William Winter, the dean of dramatic critics, John Kenneth Turner, the author of "Barbarous Mexico", Rabbi Wise, the noted Jewish Rabbi, and John E. Lathrop, who contributes a non-partisan review of national affairs. Charles Erskine Scott Wood contributes each month under the title of "Impressions" a brilliant record of personal opinion.

¶ The Pacific Monthly has become noted for having published some of the best verse appearing in any of the magazines. Charles Badger Clark, Jr., contributes his inimitable cowboy poems exclusively to The Pacific Monthly. Berton Braley, George Sterling, Elizabeth Lambert Wood, Wm. Maxwell, and other well known poets are represented by their best work in our pages.

¶ A feature that has won many friends for The Pacific Monthly has been our descriptive and industrial articles. During the coming year one or more such articles will be published each month. Articles now scheduled for early publication are: "Money in Live Stock on the Pacific Coast", "Success with Apples", "Nut Culture in the Northwest", "Success with Small Fruits", "Fodder Crops in the Western States".

¶ In addition to these articles the Progress and Development Section will give each month authoritative information as to the resources and opportunities to be found in the West. To those who are planning to come West, the descriptive illustrated articles on various sections of the West will be invaluable.

¶ If you want a clean, fearless, independent magazine—one that will give you wholesome, readable stories, authoritative, descriptive articles of the progress being made in the West, a magazine that believes thoroughly in the West and the future destiny of the West—you will make no mistake in subscribing for the Pacific Monthly. Its subscription price is \$1.50 a year. To enable you to try it for shorter period, however, we will give a trial subscription of six months for \$.50.

¶ Fill out the coupon below and send it with \$.50 in stamps to The Pacific Monthly Company, Portland, Oregon.

THE PACIFIC MONTHLY COMPANY  
Portland, Oregon

Gentlemen:—Enclosed find fifty cents in acceptance of your special offer of a trial subscription for six months.

Name.....

Address.....



## ORGANIZATION A VALUABLE PUBLICITY AGENCY

BY C. C. CHAPMAN, AT MEETING OF OREGON STATE HORTICULTURAL SOCIETY

**H**AD it done no more than to hold a session like this, which has been bringing out papers of the value of Mr. LaFollette's, to which we have just listened, the value of the Oregon State Horticultural Society to the State of Oregon as a publicity organization would certainly have been demonstrated. Of course, that is only the smallest part, in a way, of what it has done. I may add to the force of Mr. LaFollette's paper by stating that I have had the pleasure of visiting both his son's ranch and his own, away down on the Willamette River, near Wheatland, twelve miles this side of Salem. He has understated rather than overstated the possibilities of peach growing on many of the lands of the Willamette Valley, and the way he has put it has been so forceful, so conservative and carried so much conviction with it that I know, in our publicity matter which we are sending out, we shall take advantage of that and quote liberally from his paper, with a view to inspiring confidence in Oregon as a peach state as well as an apple state.

Now, I judge that some of the apple fairs—among which the Oregon Horticultural Society has been taking the lead for many, many years—some of the apple fairs must have been doing far more work toward getting Oregon advertised than the producers of any other product of the soil in Oregon. Mr. LaFollette mentioned that at the Oregon Development League meeting in Salem everything was apples, apples, apples. Now, as a matter of fact only about two per cent of the products of the soil raised in Oregon are apples.

Dr. Withycombe, of the State Agricultural College, estimates that in 1910 the value of the products of the soil of Oregon, farm produce included, amounted to more than \$115,000,000; of that only \$6,000,000 was fruit, and of that \$6,000,000 only \$2,000,000 was apples. If apples represent only two per cent and got about ninety-nine and forty one-hundredths per cent of the publicity down at the meeting of the Oregon Development League in Salem and at the Chicago Land Show and the National Apple Show held in Chicago, following the land show, and the National Apple Show just completed in Spokane—where Oregon apples have been capturing not only sweepstake prizes, but most of the advertising, it certainly indicates that the apple has been advertising Oregon. What we are afraid of is that possibly it is almost advertising too much, and that people are beginning to think that Oregon is not only an apple state, but that it is an apple state only; so the Oregon Horticultural Society certainly can take credit to itself for having done its work well.

They have been holding an apple show here in Portland for a great many years, as an accessory to the meeting of the State Horticultural Society, a splendid little show. Quality has been of the very best, and pains have been taken in the preparation of the fruit. This has resulted in a great deal of compliment

and praise. It has had influence in educating the people of Portland into recognizing what Oregon can do as an apple state. As a matter of fact, however, the incentive that has been held out to the growers to make this a great exposition has been absolutely lacking. Portland has been backward in that Portland business men—while some of them have risen to the occasion splendidly in adding to the inducements, and certainly deserve credit—the City of Portland, as a whole, does not deserve any special credit. We have been backward in Portland, there is no question about it, we have been traitors. We have let Seattle scoop us in some things and we have let Spokane scoop us badly in the fruit question, when they got the idea of a national apple show. Those of us who have been to Spokane have seen carload after carload and carload after carload of apples. They started the show in the Armory. That wasn't big enough, and they extended it to the street. That wasn't big enough, and they got a circus tent, a big Barnum & Bailey tent. That wasn't big enough, and they got a tent made to order. That wasn't big enough, and they extended out further and further, and covered up the streets. It was simply wonderful, and passes conception. Nobody has any realization of what that show was like unless he has seen it. Spokane beat us to it, and has got the National Apple Show, and so, to a certain extent, Portland has had to take a back seat. But there is something very comforting about this situation here in Portland, because the Oregonians have carried away the big prizes. While Spokane business men put up something like \$42,000 of their own money to make the Spokane Apple Show a success, it has been felt that the great result of the expenditure of their own money is the free advertising of Oregon. She got the advertising for having taken all of the great prizes from the city and state which was putting up for the expenses, so there are some joys, as you can see, in Portland's position today. We have had the benefit of the advertising. People believe it perhaps more readily when Spokane advertises the Oregon apples as sweepstakes of the nation than if Oregon herself advertised them as such. You know when we toot our own horn some people will say, "Blessed be he who tooteth his own horn, for otherwise it will not be tooted," but when others toot the horn for us it means something. With Spokane advertising the Oregon apples we have the advantage at a very low cost, but there is no reason in the world why we should simply drop it at that point. There may be a time when Oregon will not take all of the sweepstake prizes. In fact we may come to the point where it will be so thoroughly regarded as certain that Oregon will take the prizes that we may be asked to step aside for a while in the interest of the Northwest and give the Washington fellows a chance to make a showing.

We have really got to do something here in Oregon to get Oregon on the

map, not necessarily in competition with the National Apple Show at Spokane, but in a way that will give further identity to Oregon as an apple state. It seems to me that can be done in a way that Spokane has, fortunately, overlooked. Spokane has done a wonderful work in creating the National Apple Show, and we compliment Spokane on this great advertisement of the Pacific Northwest, and we certainly do not want Portland or any other city to have a "National Apple Show." Spokane has carried away the laurels, and is wearing the wreath, and we want to accord it to them with the hand of good fellowship and cheer them on their way, but that is no reason in the world why we

Buy and Try

# White River Flour

Makes  
Whiter, Lighter  
Bread



**CAMPBELL SUB-SURFACE PACKERS**

We are the sole manufacturers of this famous Sub-Surface Packer, the only one made.

This is the one that you have heard everyone talking about.



Send for our Special Pamphlet on Sub-Surface Packing, the best known system for "dry farming," a method of absolutely insuring bumper crops with a minimum rainfall—the salvation of semi-arid regions.

Made in Three Sizes, with 10, 16 and 24 wheels, is heavy and strong, and the frame is made to carry all the extra weight required. Write for Catalog No. V

**Parlin & Orendorff Co.,**  
CANTON, ILL.



Know what  
you are  
planting

*"Don't buy  
a cat  
in a bag"*

## Important to Planters and Fruit-Growers

Through the **Ballygreen System** of selection and certification we make it possible for planters and fruit-growers to secure clean, hardy nursery stock of proven **quality** and **pedigree**, propagated from the best trees in the finest orchards of the famous fruit valleys of the West.

Pedigree  
certified  
under  
affidavit on  
respective  
dates of  
cutting and  
delivery

It has been our good fortune to secure for the season 1911-12 scions from the following **prize-winning orchards**:

C. H. Sproat, Hood River, Oregon (winner of Sweepstakes prize, Spokane National Apple Show, 1910, and Chicago Apple Show, 1910, best carload of Spitzenbergs).

O. G. France, Wenatchee, Washington (winner of prize for Winesaps, Spokane Apple Show, 1908 and 1910).

Dick Hart, Toppenish, Washington (winner of prize for carload of mixed apples, Spokane Apple Show, 1910).

We have also secured selected strains and varieties from the orchards of Tedford Brothers and Green Brothers, Wenatchee, Washington (winners of plate prizes at Vancouver, B. C., Apple Show, 1910, and at National Apple Show, 1910); J. B. Holt, Pullman, Washington; W. E. Bowes, North Yakima, Washington; Bear Creek Orchards, Medford, Oregon, and others.

Our trees have the **well-balanced roots and tops** that skilled horticulturists aim to secure.

We grow **exclusively**, and are pleased to offer to planters for 1911-12 **Selected Trees of Certified Pedigree**.

### BALLYGREEN NURSERIERS

Please write for price list and pedigree book

HANFORD, WASHINGTON

## The Best Trees That Grow

### ARE NOT TOO GOOD FOR YOU

Our stock has given such excellent satisfaction wherever planted that you cannot afford to do without it.

There's a reason, too:

- A splendid location with
- Deep, red soil, well drained
- A long growing season
- Moisture under control

Remember that the recollection of quality remains long after the price is forgotten.

### Yakima Valley Nursery Company

Toppenish, Washington

More salesmen wanted.

could not start in and create a great Oregon apple show. It seems to me that with the wealth we have here and the spirit we have throughout the state, and the energy we have and the experience we have, which produces the finest apples in the world, it ought to be possible for Oregon to put up an Oregon apple show that ought to excel the apple shows held elsewhere. I believe it is entirely possible for Oregon to become identified with the greatest apple show, not necessarily national, but the greatest apple show produced in the world, and simply call it the Oregon apple show. I do not think we should exclude exhibitors from other states; we ought to encourage them to come from everywhere, let them come from all over the nation. If they think, back East, that it is simply in the method of cultivation rather than in the climate let them bring their apples and carry away some of the Oregon premiums. Let us invite them to come here and see what they can produce to compare with what we have produced. We certainly want to encourage Montana, and Idaho, and Washington, and British Columbia to enter their products in the Oregon apple show, and let them take away the Oregon prizes if they can. We have scooped them in Vancouver, British Columbia; we have won the prizes in Spokane, and we don't want to adopt a niggardly policy and exclude any part of the West or of the nation from the Oregon show. We want to invite them in to compete, but let us make it our purpose to set up an Oregon

show that will be the apple show, and let it be named "The Oregon Apple Show."

The business men of Portland are beginning to see what is possible in way of an apple show. Sixty of them went to Spokane on one train and saw the National Apple Show, and they saw what was possible, saw how that great attraction was a drawing card from all of the Pacific Northwest, saw what it was worth as an advertising feature to Spokane, even though it was called the National Apple Show. It seems to me if Portland business men can be properly enthused they will put their hands in their pockets and enable the Oregon apple show to make a premium offering, which, so far as the value of its offering is concerned, will certainly entitle it to rank with Spokane.

The Spokane exhibits have been transplanted to Chicago. Chicago is a wonderful center. It is a city rather than a country town, and it has appealed to me that valuable to the Pacific Northwest as is the advertising of the Oregon apples and the Washington apples at Chicago—valuable as that is to the Northwest, still more valuable advertising could be done in what might be called the country cities. Take Omaha, for instance, the gateway to the great farming regions of Nebraska and Colorado, and, further, take St. Paul, Minneapolis, Kansas City, and even St. Louis, Missouri, which today ranks very, very high—I am not definitely informed, but possibly the highest. I know it did for a great many years rank the best in apple

production. Missouri and Southern Illinois were known for generations as great apple sections. St. Louis would be a splendid place in which to make a grand exhibit. It seems to me, from the point of view of advertising Oregon and advertising the apple industry of the Northwest, that the Oregon Horticultural Society, in connection with the apple growers, should take upon itself the greater purpose of moving the apple show through a circuit of the Western and Middle Western cities—farm cities—where, instead of great crowds of city bred people with just a sprinkling of farmers, instead of those just coming to see the show from curiosity, there would come in crowds the producers themselves from the farming centers, from the agricultural centers, towns like Sioux City, Iowa, and Aberdeen, Dakota.

If the Oregon apple show is perfected to the highest point, as I certainly think it will be, and if the prize winning exhibits can be taken back there to those cities, they will advertise Oregon and the Pacific Northwest even more than it is being advertised today by the National Apple Show in Spokane. These things, it seems to me, are entirely possible. The Horticultural Society is the agency through which this work can be taken up. Your president, Mr. Atwell, spent three months of this present summer and fall traveling around through the East, largely on the purpose of this organization. He went there not only with the prestige of being the president of this society, which commanded the confidence of people throughout the East, many of whom knew him personally, but he went with the backing of the commercial organizations of this city and state, of the Oregon Development League and the Portland Commercial Club. He was royally received and welcomed. The people felt that he had a message for them in telling about Oregon as an apple state. The newspapers printed columns of his interviews, and he advertised the state in that way. Most valuable of all, he acquired information as to the possibility of exhibiting Oregon fruits, and his views on these matters are worth more than you possibly realize. He is authority on the subject, and we look to him as a leader.

Let us all get together on this in the right spirit and with enthusiasm. Let every individual member of this society, every individual grower, realize that this will not only raise the standard of the industry, but it will advertise this section of the country as a better place in which to live. Sometimes we get the idea that the apple is being talked about too much, that we ought to talk more of livestock and the more staple industries, but it seems that the apple is the most valuable, in an advertising way, as an index of the climate. A perfect apple cannot be raised in any country where the climatic extremes are so great as they are in the Middle West.

This is a country of opportunity, of great resources, a country where a young

man can come with practically no means and find for himself a future. It is a country where anyone who has accumulated means can come in order to live instead of exist. In our advertising we have headed advertisements with the wording "Opportunities in Oregon," and we have headed other advertisements with the words "Mild Climate in Oregon," and it is the mild climate which seems to appeal to the larger number. The apple of the Northwest is today the great advertisement of climate, and a climate where the peach can grow is

**SPRAYING SUITS** AN ABSOLUTE NECESSITY for comfort and convenience in spraying; made to your measure; also OVERSUITS for farmers, mechanics, miners, teamsters, automobile owners, and hunting, fishing and camping. Send for pamphlet and prices.

AGENTS WANTED

ARNOLD SPECIALTY CO.

Box 182

Poughkeepsie, New York

## Better Farming

### A John Deere Book

—Just Out

### A Farmer Can Get It Free



THIS valuable book has eighteen articles on live farm topics, written by the highest authorities. Get the book and a full description of John Deere Plows and Cultivators. They are the implements of quality, made for farmers who want the best. We will send the book and catalogue of John Deere goods if you write for

Package No. 46

Mention the package number sure, then you will get exactly the right stuff.

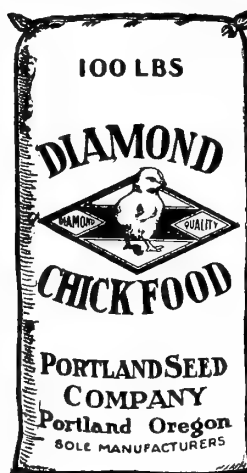
**DEERE & COMPANY, MOLINE, ILL.**

## GENUINE

# DIAMOND CHICK FOOD

## Insures Healthy, Vigorous, Sturdy Chicks

**A SCIENTIFIC AND COMPLETE FOOD.**



### Nothing Else Needed

"Diamond" Chick Food is made from select grains and seeds, sweet dried meat, grit, shell and charcoal. *Steel Cut, No Dust.* Accurately proportioned and always of uniform food value. Not a tonic, not a medicine, but a natural food. None other so good.

### Ask for Free Sample.

Our 1911 Special Catalog of "Diamond" Quality Poultry Supplies with practical suggestions and information on the care of poultry, their diseases and treatment—sent free upon request. Ask for catalog No. 202

### Warning to Poultrymen

The wonderful successful and superior quality of our "Diamond" Chick, Scratch and Egg Foods has caused them to be widely imitated, unscrupulous dealers going so far as to brand their product as "Diamond." **Do not be deceived by these mixtures.** if you are not already familiar with our Poultry Foods send at once for free samples. Compare them with others and note the "Diamond Quality." Insist that our name and "Diamond" trade mark appear on each package. It's your guarantee of real quality—the highest obtainable. "Diamond" Chick, Egg and Scratch Food is put up in 100 lb. bags, full weight. The genuine original "Diamond Chick Food is manufactured only by the Portland Seed Co.

## Portland Seed Co.

Portland : : Oregon

Just received 2 Carloads of Mandy Lee Incubators. Can now make immediate shipment.





## Let Us Tell You About Central Oregon

The last *large* area of land in the country for the Home-seeker—just opened by the building of the

### Oregon Trunk Railway

the newest of the Northern Pacific's affiliated lines. Through the scenic Deschutes Valley into the heart of a vast and productive section, with an ideal climate. This country is admirably adapted to general farming and fruit-growing, cattle raising and dairying—particularly the latter, on account of the unusually long grazing season. Numerous irrigation projects being developed. Now is the time to buy land cheap. *Get in on the ground floor.*

#### Low Rate Round-trip Homeseekers' Tickets

to all points on the new line to and including Madras and Metolius, Oregon, on sale first and third Tuesdays of each month: \$52.50 from St. Paul-Minneapolis, \$57.50 from Chicago—correspondingly low fares from all points in the East, Middle West and South.

Get our new Oregon pamphlet—fully descriptive, with maps and illustrations—and details about fares and daily through electric-lighted Tourist Sleeping Cars over the "Scenic Highway through the Land of Fortune."

A. D. CHARLTON, Asst. Gen'l Pass. Agent      A. M. CLELAND, Gen'l Pass. Agent  
Portland, Ore.      St. Paul, Minn.

## Northern Pacific Railway



even more attractive than the apple climate, so we do not want to overlook the peach. I will tell you that anyone who has been through these orchards of the valleys of the Willamette, and the Umpqua, and the Rogue and the Columbia know that they can raise beautiful peaches. It is simply a delight to see them and get one's teeth stabbed into one of those luscious fellows right off the tree, and to see how carefully they are handled and how carefully they are wrapped and packed—the peach industry itself is a great advertisement for Oregon. We don't want to forget the pear. Medford started a pear fair and scooped some other parts of the state. Down in Medford they say we cannot raise pears in the Willamette Valley, but I have tasted just as good pears in the Valley of the Willamette as I have ever tasted in the Valley of the Rogue. We don't want to forget the pear and the peach.

In the newspaper offices, when they have a lot of information coming in relating to some subject, they try to get one of the striking features in the headline at the top. The apple today is Oregon's headliner. Let us also support the publicity for the peach, let us get in behind the Medford Pear Fair and make it the success it deserves, and let us give credit to the Spokane National Apple Show, but let us not forget that right here in Oregon we have the opportunity to create one the greatest advertisements Oregon can have, and carry with it the name and identity of the state, "The Oregon Apple Show."

## THE NORTHWEST ASSOCIATION OF NURSERYMEN

Oregon—Albany Nurseries, Albany; A. Brownell, Portland; Sunnyslope Nursery Company, Baker City; Carlton Nursery, Carlton; A. McGee, Orenco, M. McDonald, Orenco; H. S. Galligan, Hood River; Tune-a-Tune Nursery, Freewater; J. B. Weaver, Union; S. A. Miller, Milton; G. W. Miller, Milton; C. B. Miller, Milton; F. W. Power, Portland; J. B. Pilkington, Portland; C. F. Rawson, Hood River; F. W. Settemier, Woodburn; F. H. Stanton, Hood River; E. P. Smith, Gresham; W. S. Sibson, Portland; Sluman & Harris, Portland; C. D. Thompson, Hood River; H. A. Lewis, Portland; Sunnyslope Nursery Company Baker City. Washington—C. J. Atwood, Toppenish; J. J. Bonnell, Seattle; A. C. Brown, R. D. 2, Selah; Ed Dennis, Wenatchee; A. Eckert, Detroit; D. Farquharson, Bellingham; George Gibbs, Clearbrook; W. A. Berg, North Yakima; Interlaken Nursery, Seattle; Inland Nursery and Floral Company, Spokane; Rolla A. Jones, R. D., Hilliard; A. Lingham, Puyallup; G. A. Loudenback, Cashmere; A. W. McDonald, Toppenish; C. Malm, Seattle; C. McCormick, Portage; W. S. McClain, Sunnyside; T. J. Murray, Malott; G. W. R. Peaslee, Clarkston; Richland Nursery Company, Richland; J. A. Stewart, Christopher; C. N. Sandahl, Seattle; F. K. Spalding, Sunnyside; H. Schuett, Seattle; A. G. Tillinghast, La Conner; Wright Nursery Company, Cashmere; F. A. Wiggins, Toppenish; C. B. Wood, R. D. 2, Selah; C. N. Young, Tacoma; E. P. Gilbert, Spokane; Stephen J. Hermeling, Vashon; Northwest Nursery Company, North Yakima; H. C. Schumaker, Brighton Beach; E. P. Watson, Clarkston; Yakima Valley Nurseries, Toppenish; Yakima-Sunnyside Nurseries, Sunnyside.

California—John S. Armstrong, Ontario; F. X. Bouillard, Chico; J. W. Bairstow, Hanford; Chico Nursery, Chico; Leonard Coates, Morgan Hill; California Rose Company, Los Angeles; California Nursery Company, Niles; Charles A. Chambers,

Fresno; L. R. Cody, Saratoga; R. P. Eachus, Lakeport; A. T. Foster, Dixon; E. Gill, West Berkeley; C. W. Howard, Hemet; William C. Hale, Orangehurst; William Kelly, Imperial; James Mills, Riverside; S. W. Marshall & Son, Fresno; John Maxwell, Napa; C. C. Morse & Co., San Francisco; Fred Nelson, Fowler; Park Nursery Company, Pasadena; George C. Roading, Fresno; Ruehl-Wheeler Nursery, San Jose; Silva & Bergholdt Company, New Castle; G. W. Sanders, Davis; Scheidecker, Sebastopol; W. A. T. Stratton, Petaluma; R. M. Teague, San Dimas; T. J. True, Sebastopol; J. B. Wagner, Pasadena; W. F. Wheeler, Oakesdale; Edwin Fowler, Fowler; Hartley Bros., Vancaville; Thos. Jacobs & Bros., Visalia.

Alabama—W. F. Heikes, Huntsville. British Columbia—F. R. E. DeHart, Kelowna; M. J. Henry, Vancouver; F. E. Jones, Royal Avenue, New Westminster; Richard Layritz, Victoria; Riverside Nurseries, Grand Forks; Royal Nurseries & Floral Company, Vancouver.

Colorado—J. W. Shadow, Grand Junction.

Idaho—Anton Diedrichsen, Payette; J. F. Littooy, Mountain Home; O. F. Smith, Blackfoot; Tyler Bros., Kimberly; J. C. Finstad, Sand Point; C. P. Hartley, Emmet; J. A. Waters, Twin Falls.

Montana—Montana Nursery Company, Billings. New Hampshire—Benjamin Chase Company, Derry Village.

New York—Jackson Perkins Company, Neward; McHutchinson & Co., New York; Vredenberg & Co., Rochester.

Pennsylvania—J. Horace McFarland Company, Harrisburg.

Tennessee—Southern Nursery Company, Winchester.

Utah—Harness, Dix & Co., Roy; Orchardist Supply Company, Salt Lake; Pioneer Nursery Company, Salt Lake; Utah Nursery Company, Salt Lake; Davis County Nursery, Roy.

## Hood River Valley Nursery Company

Route No. 3, Box 227

HOOD RIVER, OREGON

Phone 325X

Will have for spring delivery a choice lot of one-year-old budded apple trees on three-year-old roots, the very best yearlings possible to grow. Standard varieties from best selected Hood River bearing trees—Spitzenbergs, Yellow Newtowns, Ortleys, Arkansas Blacks, Gravensteins, Baldwins and Jonathans. All trees guaranteed first-class and true to name. Start your orchards right with budded trees from our nursery, four miles southwest from Hood River Station.

WILLIAM ENSCHEDE, Nurseryman

H. S. BUTTERFIELD, President

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## MAKING OF A SMALL FRUIT GARDEN A NECESSITY

From the Weekly Oregonian

EVERY farmer has a vegetable garden. Practically every farm has an apple orchard, while there are cherry trees along the fence rows and pears and plums about the barn and house. Just as these are considered a necessity on every well ordered farm, so a garden of small fruits is considered a necessity wherever the people have become accustomed to the luxury of having an abundance of fruit for daily use.

If we set out an orchard we must wait before it will produce much fruit, but we begin to eat of the small fruits the very next season after setting the plants. If we set strawberries this season we may expect a full crop next spring, and of raspberries a partial crop. Currants, raspberries and gooseberries will generally bear full crops the third year if good plants have been set out.

If there is a warm knoll a few rods from the buildings, says a writer in Greene's Fruit Grower, select it for the fruit garden. The ground should be well drained, that is, water must not lie in it, but it should not be soil which dries out and bakes in warm weather. Land sloping to the south or east is to be preferred for fruit growing when it can be secured. The one location on the farm to avoid is where the soil is cold and wet. Fruits will do no good in such a location. Buds and blossoms do not suffer as much from frost on slight elevations as on low grounds, hence we seek such places for our fruit. Lay out the garden in harmony with the buildings and the fields.

Give the ground a good heavy coating of stable manure, plow it under and grow a crop of corn or potatoes. Manure the ground and plow again. It should be cultivated thoroughly, and when dry it is ready to plant. Spring planting is well adapted for all small fruits, and is here recommended.

Plan a garden of a quadrilateral form, much longer than wide. For an acre garden, 400 feet long by 100 feet wide; a half acre, 300 feet by 72 feet, or a quarter acre, 175 by 45 feet. Let the rows be six feet apart and the plants four feet in the row. Having the length of the rows, the number of rows and the distance apart in the row, it is easy to calculate the number of plants of each kind which will be needed. Strawberries may be set fifteen inches apart in the row, the rows being three feet apart. If all the plants, except strawberries, are set so that they can be cultivated in two directions by the horse it will save much time and labor.

For strawberries only a shallow drill mark is made to indicate the position of the rows. The roots of the plants are carefully spread in a shallow excavation. There is no trouble in securing a good set of these plants if it is remembered that the roots of these plants must never be exposed to air or sun, that the plant must be set at same depth as it stood before moving, and, lastly, that the earth must be thoroughly composted about the roots.

For the other small fruits furrow the land out to a good depth. Drop the plants in the rows at four feet, and with

a hoe and the feet cover and tramp the plants well into their places. Currants and gooseberries will need to be set deeper than raspberries and blackberries. Buy only first class plants from reliable dealers. No stable manure should be placed in contact with the roots of bushes at planting time.

Give clean cultivation, just as corn or potatoes need, no more, no less. Do not let a weed grow, and keep the ground always stirred until the growing season is over.

After setting strawberries should have all the blossom branches and all the runners pruned away, as they appear until August. This will give good, strong plants. After planting the raspberries and blackberries cut off all the tops at about a foot above the ground. When the new tops are about four feet high they should be cut off. This will give sturdy plants, able to stand up without stakes. After bearing the old canes are cut out, as they bear but once. The suckers should be cut down as they appear. Currants and gooseberries should have a large portion of the shoots cut out each spring. This will throw all the strength into fewer branches and give finer fruit.

The beginner is advised to plant only such hardy varieties as have been proved of value in his neighborhood, and not to need winter protection. This is true of all small fruits except strawberries, which may be covered with leaves, clean straw or corn fodder after the ground is frozen, in the early winter. The best mulching for all small fruits, except the strawberry, is thorough cultivation, as is given to corn and potatoes.

Almost the whole world knows of Hood River as a place that produces the best fruits, and all of Hood River Valley should know, and could know, that there is one place in Hood River, under the firm name of R. B. Bragg & Co., where the people can depend on getting most reliable dry goods, clothing, shoes and groceries at the most reasonable prices that are possible. Try it.

### WHOLE ROOT TREES

Are the only kind to set. Now is the time to make arrangements for your next fall's requirements. We have a large, full line, and ask that you correspond with us.

CARLTON NURSERY CO.  
CARLTON, OREGON

### W. F. LARAWAY

DOCTOR OF OPHTHALMOLOGY

EYES  
TESTED



LENSES  
GROUND

Over 30 Years' Experience

Telescopes, Field Glasses  
Magnifiers to examine scale

Hood River  
Oregon

and

Glenwood  
Iowa

WE GUARANTEE RESULTS

## Crest Spray

A HEAVY MISCIBLE OIL FOR  
ORCHARDS AND GARDENS



An Effective

## EXTERMINATOR

of all

Insect Life, Germs  
and Vermin

CREST SPRAY is the result of scientific and practical experiments by the best phytopathologists and chemists.

ANALYSIS: Tar and kindred products, Naphthal, Pyroligneous Acid, Douglas Fir Oil, Phenols, Creosote, Turpentine, Resin, Sulphur and Soda.

### DIFFERS FROM OTHER SPRAYS

Crest Spray is a soluble or miscible oil and mixes readily with water. It remains in solution, forming an emulsion.

It is non-poisonous and harmless to operator.

Requires no boiling or preparation like the Lime-Sulphur.

Its use is a saving of time and money.

Home-made Lime-Sulphur costs from 1½ cents to 2 cents per gallon.

Crest Spray costs from 1½ cents to 3 cents per gallon.

A gallon of Crest Spray has a covering power almost twice as great as Lime-Sulphur, reducing the cost nearly one-half.

SCIENTIFIC, EFFECTIVE, CON-  
VENIENT, ECONOMICAL

### PRICES:

Barrels, 25 or 50 gallons, per gallon	\$1.25
Five-gallon can, per gallon	1.35
One-gallon can, per gallon	1.50
Half-gallon can	.90
Quart can	.50
Pint can	.30

Testimonials sent on application

Crest Chemical Co.

84 Bell Street

Seattle, U. S. A.



## Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. Send for prices.

**RAWSON & STANTON, Hood River, Oregon**

## ALPINE ORCHARDS

300 Acres in one-year-old trees of best commercial varieties. Red-shot soil, rolling in character, giving perfect air and soil drainage. Good shipping facilities, schools, churches, etc. Prices \$250 to \$300 per acre, cared for one to four years by our horticulturist. Any size tract.

Also a few 10-acre tracts ready for the plow and some with scattered timber. Prices right.

Small payment down and easy terms handle any of these.

### OREGON APPLE ORCHARDS CO.

432 Chamber of Commerce Building Portland, Oregon

Branches { 602 Metropolitan Life Building, Minneapolis, Minn.  
Bloomington, Illinois

### EXPERIMENTS IN APPLES AND PEARS.—

The department of horticulture at the Oregon Agricultural College is doing pollination work on an extensive scale in apple and pear orchards this year near Medford and Hood River. Four men—R. W. Reese, assisted by J. M. Spidel of Edmund, Oklahoma, Ray Roberts of Lebanon, Linn County, and C. C. Thompson of Hood River—have been at Medford experimenting on crossing, in the orchards there, and studying various problems concerning the setting of pears and apples. A corps of the college men will shortly go to Hood River to take up the study of some special problems there. For three years work has been done on problems as to sterility and fertility of apples there, and the mutual affinity of all the leading varieties up there. This year special difficulties in handling Spitzenbergs will be taken up. Trees of varying vigor will be studied to learn what influences such conditions as their fertility or sterility. For the first time work will be conducted at Freewater and in the Milton district, and a part of the Walla Walla Valley. The problems will be in connection with the special fruits grown in that region to determine whether the climatic conditions there cause any variations from data already collected in other regions. Special studies are to be made of the Jonathan, Rome Beauty and Winesap apples. At the home station at the college E. J. Krause, assisted by others of the horticulture department, is going to conduct elaborate series of studies and experiments. Their work is to be more along the line of bud study, as to the development and differentiation of apple buds. Professor V. R. Gardner has started a series of studies of the blossoms of the prune and cherry along the line of preliminary studies of breeding work he hopes to take up this coming year with these fruits. We shall first determine the fertility or sterility of the leading varieties of cherries and prunes. From the studies obtained we hope to get a certain percentage of seedlings which indicate the stability and unit characters of these varieties. J. D. Griffin of Astoria, Clatsop County, a junior student, will assist Mr. Gardner.

### Berry Boxes and Crates

### Tin Top Fruit Baskets

Folding Berry Boxes at \$2.50 per M

SEND FOR SAMPLES

**JOHN J. OLSEN & BRO.**

Ogden, Utah

Established 1892

Tacoma, Washington

## NURSERY CATALOG

*New, handsome, instructive, up-to-date, describing*

Fruit and Ornamental Trees, Shrubs, Vines, Roses, Berry Plants, etc.

*Free on request. Write now, mentioning this paper.*

**J. B. PILKINGTON, Nurseryman, Portland, Oregon**

## Lime-Sulphur Hydrometer

Shows proper strength for  
Spraying Trees

By mail, with test jar and instructions, \$1.00. Agents wanted everywhere.



**CARBONDALE INSTRUMENT CO., Carbondale, Pennsylvania**

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 1 and 2 Lambert-Sargeant Building  
Corner East Alder Street and Grand Avenue

**PORTLAND, OREGON**

## "Hawkeye Tree Protector"

Protects your trees against rabbits, mice and other tree gnawers; also against cut worms, sun scald, and skinning by cultivation. Cost is but a trifle. The value of one tree is more than the cost of all the Hawkeye Protectors you will need. Write for prices and full description.

**Burlington Basket Co.**

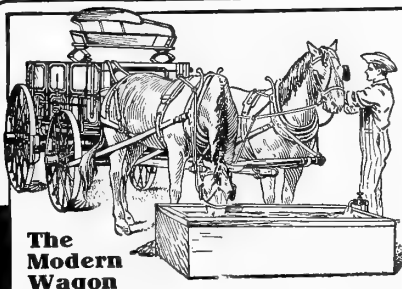
### STATE AGENTS

G. M. Westland, Wenatchee, Wash.  
Fair Oaks Nursery Co., Traverse City, Mich.  
Welch Nursery Co., Madison, Ala.  
Parker Bros. Nursery Co., Fayetteville, Ark.  
C. H. Webster, The Dalles, Oregon  
F. F. Powell, Stevensville, Mont.  
Humphrey Nurseries, Humphrey, Neb.  
Geo. F. Hall, Wendall, Idaho  
Brown Bros. Nursery Co., Rochester, N. Y.  
Elizabeth Nursery Co., Elizabeth, N. J.  
H. C. Baker, Route 2, Tunkhannock, Pa.  
O. K. Nurseries, Wynnewood, Okla.  
Jefferson Nursery Co., Monticello, Fla.  
J. A. Hess, Salt Lake City, Utah  
Denver Nurseries, Denver, Colo.  
Frank Brown & Son Co., Paynesville, Minn.  
Elm Brook Farm Co., Hallowell, Me.  
A. G. Swanson, Miamisburg, Ohio

## Mills College

**NEAR OAKLAND, CALIFORNIA**

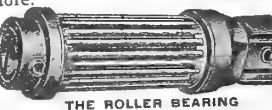
The only Woman's College on the Pacific Coast. Chartered 1885. Ideal climate. Entrance and graduation requirements equivalent to those of Stanford and University of California. Well equipped laboratories. Grounds comprise one hundred and fifty acres. Special care for health, outdoor life. Pres. Luella Clay Carson, A. M., Litt. D., LL. D. For catalogue address Secretary, Mills College P. O., Calif.



**The  
Modern  
Wagon**

There are many reasons why the **DAVENPORT** is the wagon for the farmer today. Among these are: 30% to 50% Lighter Draft, Increased Carrying Capacity, Does Not Carry Mud, No Repair Bills, No Tires to Reset, and Many, Many More.  
**Better Investigate.** Write for the booklet and also for our Package No. 22. Both sent FREE.

**DAVENPORT WAGON COMPANY**  
Davenport, Iowa



**THE ROLLER BEARING**

### OUR BOOKLET

## When the Going is Hard

Contains information that is well worth your time to read. The discussion on "A Wheel with One Spoke" is worth DOLLARS to you. We tell you why a **wooden wheel is dished**, which is something many wagon manufacturers do not know. There are about twenty-five other articles just as interesting.

## DAVENPORT ROLLER-BEARING STEEL FARM WAGON



# Use Labels! It Pays

**A GOOD COMBINATION  
AND A WINNER**

**1<sup>ST</sup> GOOD FRUIT  
2<sup>ND</sup> GOOD PACKING  
3<sup>RD</sup> GOOD LABELS**

**THE LABEL HELPS.**

## Schmidt Lithograph Co.

**E. SHELLEY MORGAN, MANAGER.**

**408 WELLS FARGO BLDG.**

**PORTLAND, OREGON.**

**SAMPLES AND PRICES ON APPLICATION**

### *The* PARIS FAIR

Hood River's largest and best store

**DRY GOODS  
SHOES, CLOTHING**

We are offering some extra specials in our Clothing Department. Ask to see them.

Try a pair of American Lady and \$3.50 Shoes, or American Gentleman \$3.50 and \$4 Shoes

### Why Bother with Irrigation?

ASK

**PHOENIX LUMBER CO.  
SPOKANE, WASH.**

ABOUT

### Cut Over Lands

**YOU CAN BUY CHEAP**

### BETTER FRUIT

Has no peer in the Northwest.

And so we have established

## The Fruit Journal

along similar lines in behalf of the great irrigated fruit districts of the Rocky Mountain region, a companion paper to this, your favorite fruit magazine.

We have made it up-to-date, clean, high class editorially, mechanically and pictorially.

The subscription rate is \$1.00 per year. It is worth it.

**THE INTERMOUNTAIN  
FRUIT JOURNAL**

**Grand Junction, Colorado**

*Ask the People Using Our Boxes About  
Quality and Service*

**WE MAKE EVERYTHING IN FRUIT PACKAGES**

### Multnomah Lumber & Box Co.

Jobbers of Pearson Cement-Coated Box Nails

Portland, Oregon

## EXPERIENCED HORTICULTURAL MEN IN DEMAND

THE great demand for trained men in the horticultural world is well illustrated by the fact that the head of the department of horticulture at the Oregon Agricultural College, Professor C. I. Lewis, has had thirteen calls for graduates to fill positions of importance on large fruit ranches owned by wealthy corporations and individuals within the past month which he is unable to satisfy because all of the graduates are either conducting fruit ranches of their own or have already obtained profitable situations.

A large corporation in Maryland, controlling several thousands of acres in orchards, is contemplating putting in some thousands of acres more in fruit trees, and has applied to Professor Lewis for a man of sufficient experience to demand a salary of \$2,500.

An Eastern university wrote Professor Lewis recently asking him to recommend a man for the position of head of the department of horticulture there.

A foreman for the combined holdings of two of Portland's leading business men who have large fruit ranches in the Willamette Valley has also been asked for from among the college graduates.

One of the largest development companies on the Pacific Coast, having thousands of acres in their holdings, and making extensive developments involving the expenditure of enormous sums of money, wants an O. A. C. graduate as superintendent of their work, and will give \$2,000 to the right man.

From Eastern Oregon there has come a call for a foreman to take charge of some 6,000 acres held by a syndicate of thirty Dakotans, to see to the planting of orchards, spraying, irrigation work and to carry the entire responsibility for the welfare of the enterprise.

An immense Eastern concern, representing over a million dollars in capital, is now making extensive developments in various parts of Oregon, and is asking the college department of horticulture for a superintendent for 10,000 acres of orchards that are among its holdings.

In the Yakima Valley, and in other parts of Washington, there are large tracts of fruit lands held by a Seattle firm which is writing Professor Lewis for an orchard superintendent.

A call has been received for a graduate of the college who will go east to Ohio and install Pacific Coast methods in large orchards near Cleveland.

Some 900 acres in Western Washington are owned by a Portland corporation which has asked for a college man to become foreman.

The Canadian Department of Agriculture, which gave an appointment to an Oregon Agricultural College graduate last June, is now calling for another.

A man who has been waiting for six months for an O. A. C. graduate to take charge of a hundred-acre walnut grove he owns near Springfield, Oregon, has announced that he is coming to the college soon to make a personal effort to secure someone, and Professor Lewis has said he must give him a man from this year's short course, since there are no others available.

Other openings with florists, or as head men in greenhouses, are also to be filled, and if there were fifty or a hundred graduates from the college every year they could all be placed advantageously, there is so great a demand for men with Western training and experience. Most of the men graduated in the past are on orchards of their own which are paying so well that they cannot afford to leave them to accept a salaried position. The rest are already placed advantageously, and thus are not available for appointment.

At the first of July last year the college department of horticulture had

refused twenty applications for graduates to fill good positions, being unable to supply the men. Sometimes requests come from men in the East, asking that positions be found for them, but the demand is for men of Western experience, whom Professor Lewis can recommend from personal knowledge.

The college needs men for its own experiment station work. If the legislature, now in session, grants the appropriations requested for the establishment of new branch stations the college will need nine more men for this one branch of the work alone next June.

FRUIT DEALERS THAT ADVERTISE  
IN BETTER FRUIT  
EASTERN BUYERS

Gibson Fruit Company, G. M. H. Wagner & Sons, Chicago; Steinhardt & Kelly, D. Crossley & Sons, Sgobel & Day, New York; Lindsay & Co., Helena, Great Falls and Billings, Montana; Lawrence Hensley Fruit Company, Denver; Ryan & Virden Company, Butte, Montana; E. P. Stacy & Sons, Minneapolis; Simons-Jacobs Company, Glasgow, Scotland; Simons, Shuttleworth & Co., Liverpool and Manchester, England; Garcia, Jacobs & Co., London, England; J. H. Lutten & Son, Hamburg, Germany; Omer Decugis et Fils, Paris, France; Simons, Shuttleworth & French Company, New York; Walter Webbing, Boston; John Brown, Brighton, Ontario; Ira B. Salomon, Canning, Nova Scotia; William Clement, Montreal; D. L. Dick, Portland, Maine; Crutchfield & Woolfolk, Pittsburg; E. P. Stacy & Sons, Fargo, North Dakota; George Middendorf Company, Chicago; Sam Haines, New York; W. Dennis & Sons, Covent Garden Market, London, England; Bigalow Fruit Company, Cleveland; C. H. Weaver Company, Chicago; W. J. Henry Produce Company, Detroit; Gamble-Robinson Commission Company, Minneapolis; Denney & Co., Chicago; Mound City Ice and Cold Storage Company, St. Louis; Ebner Ice and Cold Storage Company, Vincennes, Indiana; Grinnell, Collins & Co., Minneapolis; The Callender-Vanderhoof Company, Minneapolis; John B. Cancelmo, Philadelphia; Alfred Otis, Boston; The B. Presley Company, St. Paul; Fliegler & Co., St. Paul; Ray & Hatfield, New York; Appel & Ujffy, New Orleans; Sutton Bros., Columbus, Ohio; I. N. Price & Co., Cincinnati; Jacob G. Reuter & Co., Peoria, Illinois.

## WESTERN BUYERS

Davenport Bros., Pearson, Page & Co., McEwen & Koskey, Mark Levy, Bell & Co., Levy & Spiegel, W. B. Glafke & Co., Dryer, Bollam Company, Page & Son, T. O'Malley Company, Northwestern Fruit Exchange, Portland, Oregon; Ryan & Newton, H. J. Shinn Company, Grant McCann Company, Spokane, Washington; Davidson Fruit Company, Hood River, Oregon; Richey & Gilbert, Toppenish, Washington.

FRUIT GROWING  
AND BEE KEEPING

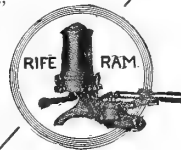
Learn what an ideal combination it makes. "Gleanings in Bee Culture" tells all about it. Six months' trial subscription 25c. 64-page book on Bees and supply catalog free. THE A. I. ROOT CO., Box 83, Medina, Ohio.

RIFE  
RAMSWater in  
Your Orchard

or fruit patch saves time and labor. Get all you need from an automatic Rife Ram.

Costs little to install—nothing to operate. Raises water 30 feet for every foot of fall. Land lying above canal or stream supplied with water. Pumps automatically day and night, winter and summer. Fully guaranteed. If there is a stream, pond or spring within a mile write for plans, book and trial offer, free.

RIFE ENGINE CO.  
2525 Trinity Bldg. New York



Within the Shadow of Glorious Mount Hood

Are Grown the World's Most Famous Apples

Last year the apple crop of Hood River was valued at \$1,000,000.

About 1,000 acres in actual bearing produced this entire crop.  
\$500 per acre is an average yield.

\$2,000 per acre is an average price for full bearing orchards.

Clip out and mail now

**FIVE YEAR**  
Orchards on  
easy payments  
for  
\$500 per acre

Hood River District Land Co., Hood River, Oregon.

Sirs: Please send me information regarding your easy payment plan of purchasing orchards.

Name .....

Address .....



# SCOTT-MUNSELL IMPLEMENT CO.

321-329 East Morrison Street, Portland, Oregon

1018-1020 Sprague Avenue, Spokane, Washington

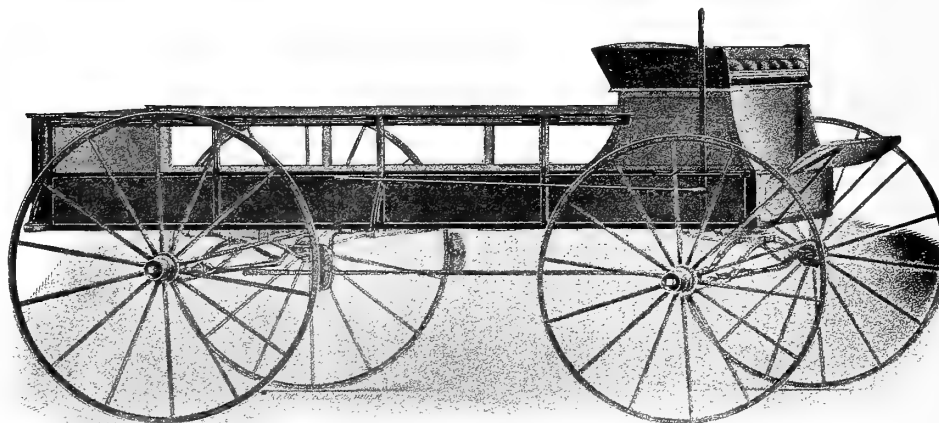
WHOLESALE AND RETAIL DEALERS IN

## Vehicles and Implements

Carry large assortment of best styles of earth-working tools; also haying and harvesting machinery; also wagons for fruit delivery and for teaming; also driving vehicles for business and for pleasure uses.

WE RECOMMEND TO FRUIT GROWERS THIS WAGON NO. 120  
MADE BY FREMONT CARRIAGE MANUFACTURING COMPANY

Bodies  
42 inches  
wide.  
Have drop  
end gate  
with chains.  
Hang low  
on duplex  
springs.



Uses the  
celebrated  
"Fitch Gear"  
"Short Turn"  
with  
high wheels,  
wide body  
hung low.

Sizes: 1 1/8-inch, 1 1/4-inch, 1 3/8-inch and 1 1/2-inch axles. Bodies: 7-foot, 8-foot, 9-foot, 10-foot; 42 inches wide.

THE NAME OF MAKERS IS GUARANTEE OF HIGHEST QUALITY

### Ryan & Newton Company

Wholesale Fruits &amp; Produce

Spokane, Washington

We have modern cold storage facilities essential for the handling of your products

Reliable Market Reports

PROMPT CASH RETURNS

### OFFICERS AND COMMITTEES OF WESTERN FRUIT JOBBER ASSOCIATION OF AMERICA THIS YEAR

Officers—John M. Walker, president, Denver; R. H. Pennington, first vice president, Evansville, Indiana; J. E. Stewart, second vice president, St. Louis; E. H. Emery, third vice president, Ottumwa, Iowa; W. M. Roylance, treasurer, Provo, Utah; W. D. Tidwell, secretary, P. O. Box 1325, Denver; W. H. J. Kavanaugh, sergeant-at-arms, Chicago.

Board of Directors—John M. Walker, Denver; W. M. Roylance, Provo, Utah; C. G. Trimble, Omaha; J. E. Stewart, St. Louis; C. A. Kerr, Chicago; Elwood H. Royer, Des Moines, Iowa; E. H. Emery, Ottumwa, Iowa; Ross A. Gamble, Minneapolis; Samuel E. Lux, Topeka, Kansas; C. B. Bills, Sacramento, California; R. H. Pennington, Evansville, Indiana.

Executive Committee—John M. Walker, Denver; Samuel E. Lux, Topeka, Kansas; R. H. Pennington, Evansville, Indiana; E. H. Emery, Ottumwa, Iowa; C. G. Trimble, Omaha.

Advisory Committee on Transportation Questions—George H. Fleischman, chairman, Topeka, Kansas; J. E. Stewart, St. Louis; R. H. Jones, Kansas City; Gus Homan, Chicago; F. B. McKev-

itt, Sacramento, California; T. A. Cargill, Houston, Texas; R. A. Gamble, Minneapolis.

Membership Committee—Charles Gerber, chairman, St. Louis; Carl Piowaty, Chicago; Jac Stich, New Orleans; John H. Hile, Louisville; T. Pearson Portland, Oregon.

Arbitration Committee—Joseph Grainger, chairman, Lincoln, Nebraska; H. G. Streight, Omaha; M. L. Dolan, Grand Island, Nebraska.

Legislative Committee—Samuel E. Lux, chairman, Topeka, Kansas; C. B. Bills, Sacramento, California; J. H. Russell, St. Louis; E. H. Royer, Des Moines, Iowa; A. A. Jackson, Dallas, Texas; A. B. Middleswarth, Denver; W. L. Wagner, Chicago.

Committee on Standard Grades and Packages—N. G. Gibson, Chicago.

Committee on Rules and Regulations for Handling and Shipping Watermelons—H. L. Griffin, chairman, Ogden, Utah; R. H. Pennington, Evansville, Indiana; J. H. Hensley, Denver; Roy Campbell, San Antonio, Texas; D. W. Longfellow, Minneapolis.

### LINDSAY & CO. LTD. Wholesale Fruits

HELENA, MONTANA

Established in Helena Quarter of a Century

Branch houses: Great Falls, Missoula and Billings, Montana

### Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

**PEACHES  
APPLES AND  
PEARS**

Solicit Your Consignments

Reliable Market Reports Prompt Cash Returns

### Rogue River Fruit and Produce Association

Packers and Shippers of  
Rogue River Fruit

Finest flavored—Longest keepers

PEARS	APPLES
Bartlett	Newtown
Howell	"Autocrat of the Breakfast Table"
Bosc	Spitzenberg
Anjou	Jonathan
Comice	Ben Davis
Winter Nelis	

**TWELVE SHIPPING STATIONS**

Modern Economy Code

K. S. MILLER, Manager

### "I HAVE SO LITTLE FUNGUS"

That I cannot afford to mark my fruit with bordeaux," says Mr. George T. Powell, of Ghent, New York, a grower of fancy apples. "I have less scale and finer foliage than ever before."

Reason: Five years' consecutive use of

## "SCALECIDE"

Cheaper, more effective, and easier to apply than lime-sulphur  
Send for booklet, "Orchard Insurance"

**PRICES:** In barrels and half-barrels, 50c per gallon; 10-gallon cans, \$6.00; 5-gallon cans, \$3.25; 1-gallon cans, \$1.00

If you want cheap oils, our "CARBOLEINE" at 30c per gallon is the equal of anything else  
B. G. PRATT CO., Manufacturing Chemists, 50 Church Street, NEW YORK CITY

Faculty Stronger Than Ever  
More Progressive Than Ever

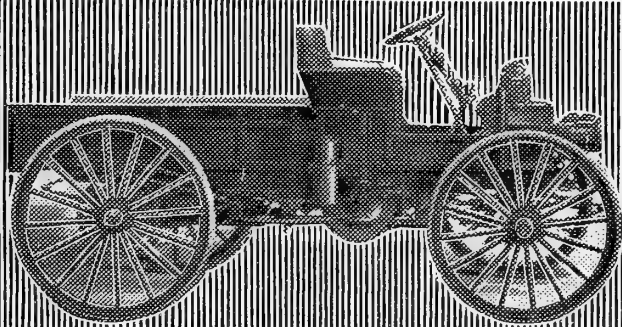
Results Better Than Ever  
Attendance Larger Than Ever

ATTEND THE BEST

# Behnke-Walker

Business  
College

PORTLAND, OREGON



## LOAD IT UP JUMP IN — AND GO

**W**ITH your International Auto Wagon or Commercial Car you can make two to four trips while your neighbor with horse-drawn vehicle is making one. And you are doing it at less cost—and with absolute assurance of getting "there and back." Fruit growers and truckers everywhere are coming to the new money-maker—the International Commercial Car.

## An International Commercial Car

is the best-paying investment you can now make. Think of traveling anywhere—as far as you like—three times as fast, and at less cost than with a horse and wagon. No horse to spring a lameness or cast a shoe, no stopping to rest tired horses, no worry about hot sun, steep hills, deep snow, sand, or mud. The International Commercial Car is so simple that any man of ordinary intelligence can operate it and care for it. All parts are easily accessible.

See the IHC local dealer and inspect one of these cars and call for illustrated and descriptive matter, or, if not convenient, write to nearest branch house for indisputable proof of what International Commercial Cars have meant to others.

**WESTERN BRANCH HOUSES:** Denver Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**

Chicago (Incorporated) U S A



## Over 1,000 Gallons

Per Hour

### Fairbanks-Morse Eclipse Pumper

# \$50.00

F. O. B. Factory

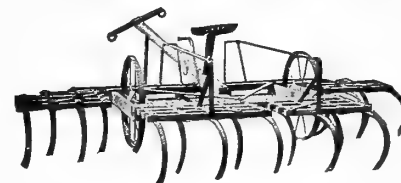


Engine and  
Pump Jack  
Complete

Free Catalog No. MH1233

**Fairbanks, Morse & Co.**  
Portland Seattle Spokane

## ORCHARD CULTIVATOR



### THE FORKNER LIGHT DRAFT HARROW

is the only perfect light-running wheel cultivator ever offered for orchard work. Each section is so easily manipulated with levers that a small boy can operate it and cultivate perfectly 30 acres per day with one team of medium weight. With this harrow one team can easily do the work of two teams with ordinary harrows. Works well in stumpy or stony land and does not clog with loose grass, roots, etc. Its extension of 11 feet, 3 1/4 feet each side of the team, enables perfect dust mulching near the tree trunks without disturbing the branches or fruit, and eliminates the use of the hoe. One machine will work 100 acres of orchard and keep it in garden tilth. These machines are labor savers and will reduce your cultivating expense one-half, even if you have but five or ten acres of orchard. Write today for prices. **LIGHT DRAFT HARROW COMPANY**, Marshalltown, Iowa.

## HEMINGWAY'S

Is the lead arsenate of the expert fruit grower. It is widely used in all of the famous fruit growing districts. Made in a factory which has specialized in arsenical manufactures for over 30 years, it has the advantage of this long experience in its preparation for the use of the discriminating fruit grower.

## Hemingway's Arsenate of Lead

### THE PERFECT PRODUCT

Possesses miscibility with maximum sticking power. Is 20% stronger than the federal law requires.

Send for booklet giving full directions for the use of Hemingway's Lead Arsenate against all biting insects.

**KERR, GIFFORD & CO.**, Portland, Ore.  
Coast Agents, who carry full stocks

**HEMINGWAY'S LONDON PURPLE CO.**  
LTD.

64-66 Water St., New York



## Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
**HOOD RIVER, OREGON**

## ORCHARDIST SUPPLY HOUSE

**FRANZ  
HARDWARE CO.**

Hood River, Oregon

## STORAGE

Ship your Furniture to us  
to be stored  
until you are located

**Transfer & Livery Co.**

Hood River, Oregon

## Burpee's Seeds that Grow

140 VARIETIES

ANY QUANTITY

Plenty of stock in our 40,000 pounds

Growing Plants as season requires

All makes high grade

Pruning Tools

Garden Tools

Hose and Spray Nozzles

International Stock and

Poultry Food

International Remedies

Incubators and Brooders

Everything for Building

Everything for Furnishing

Stewart Hardware &amp; Furniture Co.

22,000 feet floor space. Hood River, Oregon

## YAKIMA COUNTY HORTICULTURAL UNION

North Yakima, Washington

C. R. Paddock, Manager

Apples, Pears, Peaches, Cherries,  
Plums, Prunes, Apricots, Grapes  
and Cantaloupes

Mixed carloads start about  
July 20. Straight carloads in  
season. Our fruit is the very  
best grade; pack guaranteed

We use Revised Economy Code

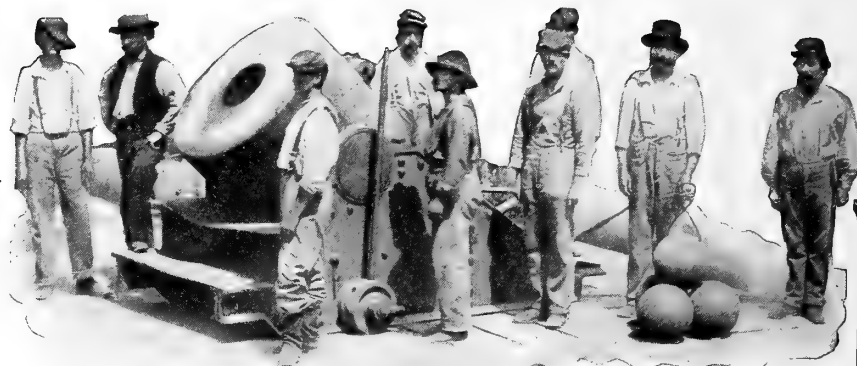
## HEADQUARTERS FOR CENTURY SPRAY PUMPS

Hose, Nozzles, First-  
class Plumbing Supplies

**C. F. SUMNER**

Successor to Norton &amp; Smith

HOOD RIVER, OREGON



Copyright, 1910, by Patriot Publishing Co.

## Who Was There Whom You Knew

Look with care at this ghostly picture—this strange old Civil War photograph. Perhaps among these Union soldiers about to venture into Petersburg—or among the besieged Confederates who tensely waited for the fire of this gun—which roared destruction just after this photograph was taken—perhaps, in that dread place, some one near and dear to you moved and fought and fell.

To every American who gazes on a scene like this comes a sense of his own heritage, for the great Crisis that tested both North and South found neither wanting in skill or courage, and made our national Government, our unity, brotherhood and character.

But where did we get that war photograph? Why do we print it here? That makes a story in itself; for in securing this picture we secured three thousand five hundred more—an astonishingly vivid panorama of the greatest struggle in modern times.

We will send you that story, well printed and illustrated by more pictures. Read this:

## 18 of these FREE Pictures

For the Cost of Mailing

To give you some idea of the bigness of this work we have chosen 18 of the photographs at random, reproduced them carefully and enclosed them in a handsome portfolio. These 18 we will send you free if you send only 10 cents for the cost of mailing. Even these samples will be valuable acquisitions.

When the public has realized the wonder of this discovery, we will no longer give pictures away. So you had better send the coupon at once and make sure of this splendid addition to your library.

## How We Got the 3,500 Unique Civil War Photographs

From Sumter to Appomattox, a camera and a dark room, under protection of Allan Pinkerton and the Federal Government, accompanied the armies and the navies through the Civil War. The 3,500 photographs taken were bought by the United States Government for \$27,840 and promptly buried in the War Department, an important part of our secret records. But the great camera genius who took the photographs kept a duplicate set for himself. When he died, these too were lost—until nearly fifty years after the war they were found again. How they were taken—how they were lost—how they were found again—how the REVIEW OF REVIEWS secured them, is a wonderful story that can't be told here.

But read the panel and send the coupon at once and you'll get the whole story.

**REVIEW OF REVIEWS CO.**

13 Astor Place, New York

Name

Address

BETTER  
FRUIT  
6-11

REVIEW  
OF REVIEWS  
COMPANY

13 Astor Place,  
New York, N. Y.

Send me, free of charge, the 18 prints of your newly discovered Brady Civil War photographs, ready for framing and contained in a handsome portfolio. Also send me the story of these photographs and tell me how I can get the whole collection for the value of one photograph. I enclose 10 cts. to cover cost of mailing.



# Seeds

THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street

J. J. BUTZER

Portland, Oregon

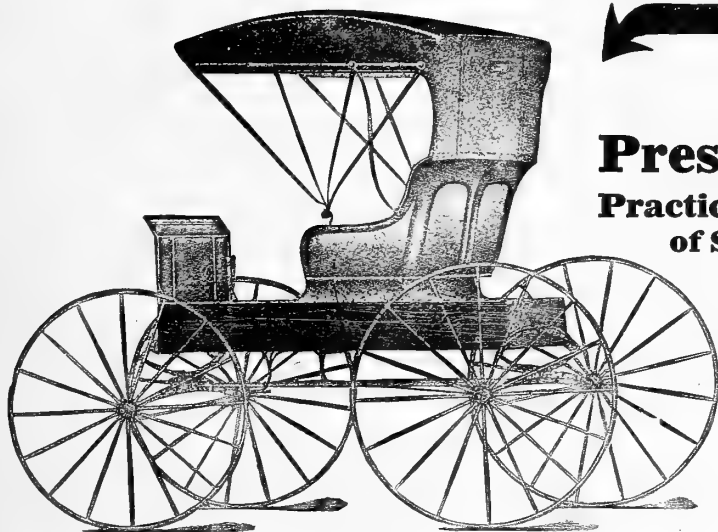
Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

J. M. Schmeltzer, Secretary

Hood River Abstract Company

Hood River, Oregon

ABSTRACTS INSURANCE  
CONVEYANCING



## PARRY Pressed Steel Buggies Practically Indestructible—Made of Super-Hardened Pressed Steel

Bodies and Seats made of same material that is used for automobile bodies. Buy a Parry Pressed Steel model and you will never be troubled with panels

splitting—no opening of corners—no plugs coming out. Metal bodies withstand intense strains. Proven by extremely rough usage given automobiles. *The Parry Pressed Steel Buggy is the latest achievement in the carriage building industry.* Body being made of steel, has a very smooth surface and takes a very high and lasting finish. They are much neater in appearance and give far greater service than the wood bodies. *The Parry stands strains that would wreck a wood body buggy.* Notice the beautiful lines of the twin auto seat, made from a single piece of steel.

Gear, wheels and upholstering of the very best quality and design. Yet with all of the advantages the Parry is but a trifle higher in price than the wood body buggies. You will be interested in a series of comparative tests that have been made to prove the tremendous sustaining qualities of the Parry. We will send these illustrated tests and the Parry catalog to those who write for them.

Branch Offices:  
Spokane, Wash.  
Boise, Idaho

*Mitchell*  
LEWIS & STAYER CO.  
109-125  
E. Morrison St.  
Portland, Oregon

## S. E. Bartmess

UNDERTAKER AND  
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

Hood River, Oregon

## Paste for Labeling

"PALO ALTO" PASTE POWDER

added to cold water, instantly makes a beautiful, smooth, white paste. Ready for immediate use at a cost of ten cents a gallon. No labor. No muss. No spoiled paste.

Paste Specialists

ROBINSON CHEMICAL WORKS

349-351 Eighth Street  
San Francisco, California

## VEHICLES AND AGRICULTURAL IMPLEMENTS

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.  
HOOD RIVER, OREGON

# WASHINGTON NURSERY NEWS, JUNE, 1911



Our Planting Crew Setting Apple Grafts, March, 1911

Our 1911 plant contains in grafted and budded stock:

Apple .....	3,375,000
Pear .....	265,650
Peach, Cherry, Prune, Plum, Apricot, Quince, etc. ....	502,850
<b>Grand total.....</b>	<b>4,143,500</b>

Above are the total fruit trees, grafted and budded, for sale fall 1911 and spring 1912, and does not include our berries, grapes and small fruit, nor our large block of ornamentals, such as roses, shrubbery, shade trees, climbing vines, etc.

## SEEDS

In addition to the above we have planted:

Peach pits .....	5 tons	5 acres
Cherry pits .....	5 bushels	3½ acres
Apple seed, French Crab....	90 bushels	60 acres
Pear seed, French .....	3 bushels	3 acres

These seed are planted to produce stock on which to graft and bud next season.

The apple seed plant is the largest ever made west of Topeka, Kansas, the great seedling center

of the United States, and with a normal stand means **nine million seedlings**. It is a little early yet to estimate our quantity, but there will be a fine lot of first-class seedlings.

## SEEDLINGS

We also have lined out for budding purposes, summer 1911:

Apple .....	500,000
Pear and other stocks.....	200,000

## Our Apple and Pear Trees

Are this year grafted on seedlings of our own growing, and are as a consequence in the best of condition.

We finished a most satisfactory delivery spring 1911 and have another large number of satisfied customers to add to our already long list. Our 1911 catalog is off the press. Our salesmen are in the field booking orders, and we are ready for yours.

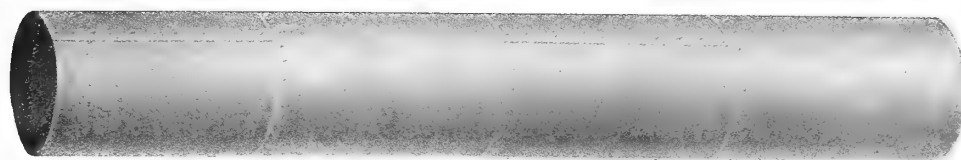
If our salesman has not yet seen you, drop us a line.

Yours for good trees, true to label, clean, well rooted, fully matured, delivered in good condition.

# Washington Nursery Co.

TOPPENISH, WASHINGTON

# ANYTHING IN SHEET STEEL



STEEL PIPES SAVE WATER

STEEL PIPES SAVE LABOR

YOU DO NOT HAVE TO WAIT FOR STEEL PIPES TO  
"SOAK UP" AND THEY LAST INDEFINITELY

WE MANUFACTURE

Galvanized Steel Pipe

Storage Tanks

Galvanized Steel Culverts

Pressure Tanks

Asphaltum Coated Pipe

Steel Flumes

Columbia Hydraulic Rams

**COLUMBIA ENGINEERING WORKS, Portland, Oregon**



A sample of our yearling trees,  
the "Nunbetter" kind

## Do You Expect to Buy Any Trees this Year ?

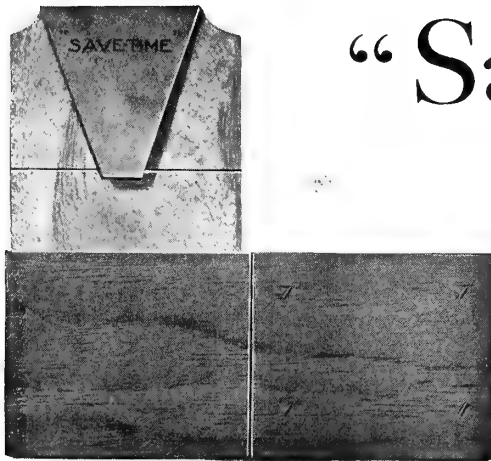
If so, then let us send you our literature explaining and illustrating our superior trees and how they are grown. You might just as well have **PROFITABLE** trees on your land as **UNPROFITABLE** ones. The difference in cost is only slight and the first crop will more than pay the difference.

We have letters from customers stating they have picked over half a box of apples per tree on trees planted only two years; and this is not an occasional tree, but runs uniform through hundreds of trees. When you have good fruit land, plant good trees.

The fact that we supplied more planters with their trees last year than in any one of the previous forty-four years the **OREGON NURSERY COMPANY** has been furnishing "Nunbetter" trees, is some favorable evidence, at least, as to the universal satisfaction **ORENCO** trees give planters, and this year will be no exception. Having the largest plant—and what is conceded the best equipped plant in the West—you can get all you need from one source. Just remember that the **OREGON NURSERY COMPANY, OF ORENCO, OREGON**, handles the best of everything in the nursery line, and that you will receive full value and courteous treatment when buying of us.

Openings for Just a Few Upright  
Industrious Salesmen

**Oregon Nursery Company**  
**ORENCO, OREGON**



AS IT COMES FLAT

# "Save-Time"

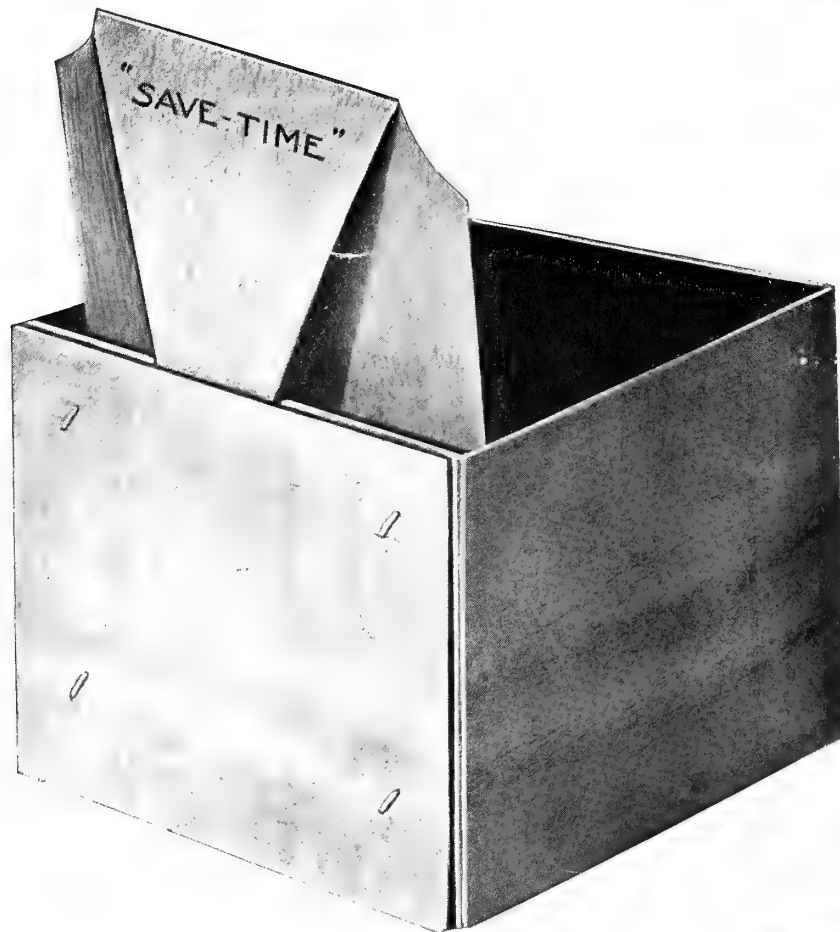
SIMPLY PERFECT

## Folding Berry Box

Made from Pacific Coast Spruce



AS IT OPENS



DON'T STAPLE  
SAVE YOUR TIME  
WHEN YOU  
NEED IT

PICKERS WILL  
SET UP THIS BOX  
IT IS SO EASY

PACKED  
THREE BUNDLES  
TO A  
THOUSAND

ASK YOUR  
DEALER OR WRITE  
OUR AGENTS  
OR US AND DO IT  
EARLY

EASILY MADE UP

NO BREAKAGE  
OR WASTE

SOLID ONE-PIECE  
BOTTOM

VERY RIGID

NO STAPLES  
IN CONTACT WITH  
CONTENTS

REMAINS IN  
PERFECT POSITION

AS IT FASTENS DOWN

MANUFACTURED BY

## Pacific Fruit Package Co.

Raymond, Washington

H. B. HEWITT, Pres. and Treas.

J. H. HEWITT, Vice Pres.

O. C. FENLASON, Sec. and Mgr.

Agents Portland, Oregon, Territory:

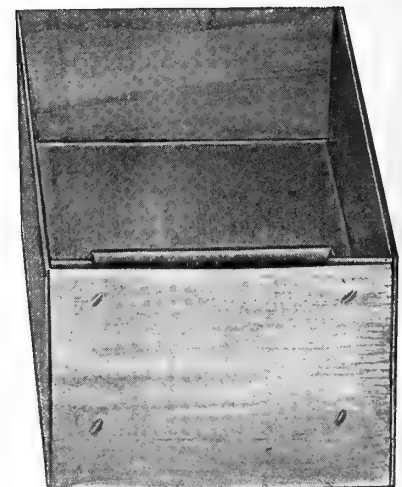
STANDARD BOX & LUMBER CO.

East Pine and Water Streets  
PORTLAND, OREGON

### WASHINGTON MILL COMPANY

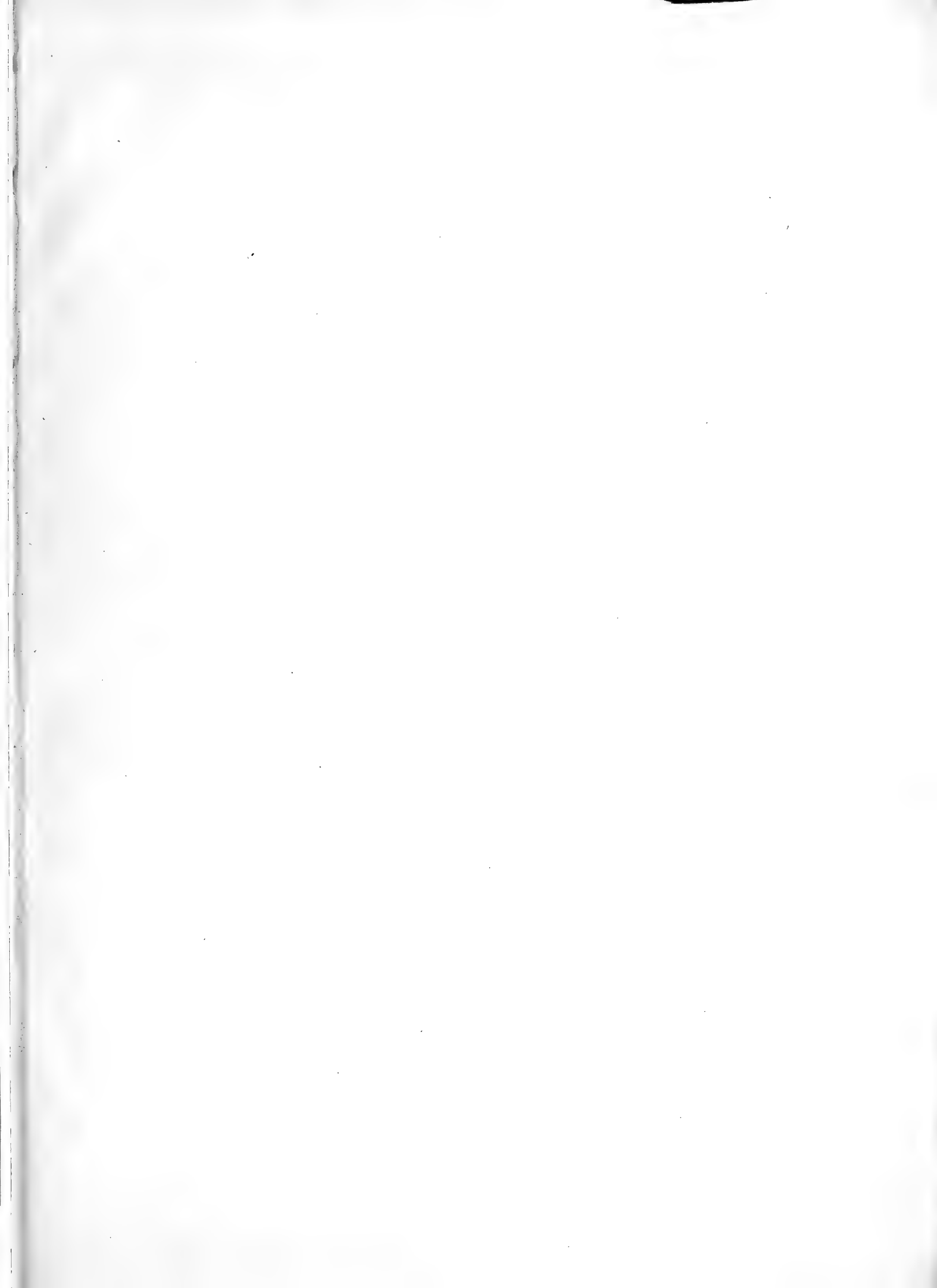
Agents Spokane Territory

Spokane, Washington



AS YOU FILL IT

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT













LIBRARY OF CONGRESS



00009169404

